

Appendix 3

**Washington State Department of
Transportation**

**Stormwater Management Program
Plan**

PRELIMINARY REVIEW DRAFT SUBMITTED TO THE DEPARTMENT OF
ECOLOGY – DECEMBER 2005

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APPENDIX A – WSDOT ORGANIZATIONAL CHARTS.....A

Section 1: Background and Overview

1.1 Introduction

After the new permit is issued, a brief paragraph will be included summarizing the new permit. This paragraph would read, for example:

In {insert month, year}, the Washington Department of Ecology (Ecology) issued a National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater and State Waste Discharge Permit to the Washington State Department of Transportation (WSDOT) for discharges from municipal separate storm sewers on WSDOT highways and facilities. This permit addresses all WSDOT highways and related facilities within the applicable NPDES Phase I and II designated areas requiring permit coverage by Ecology.

The permit requires WSDOT to develop and implement a stormwater management program (SWMP). This SWMP plan was developed by WSDOT to describe the procedures and practices WSDOT uses to reduce the discharge of pollutants in stormwater runoff from storm sewer systems owned or operated by WSDOT. This SWMP plan is a full revision of the plan published in March 1997 to reflect changes in the regulatory landscape, advancements in stormwater management, and evolution of WSDOT procedures and practices.

The methods used by the Washington State Department of Transportation (WSDOT) to manage stormwater runoff from its facilities evolved concurrently with changes in required core functions. Originally, the only function of highway stormwater management was to maintain safe-driving conditions, using engineering techniques designed to prevent stormwater from ponding on road surfaces.

Maintaining safe driving conditions continues to be essential for any functional highway drainage system. However, WSDOT also acknowledges the state's vital interests in protecting and preserving natural resources and other environmental assets and its citizens' health and safety. These interests have become integrated with other vital interests committed to the Department, including the cost-effective delivery and operation of transportation systems and services that meet public needs. Thus, WSDOT's stormwater management objectives have expanded to include:

1. Protecting the functions of the transportation facility; and
2. Protecting ecosystem functions and beneficial uses of receiving waters.

While WSDOT implements pollution prevention activities statewide, the SWMP is strategically oriented to target resources to address priority stormwater management and water resource issues.

1.2 Organization of the SWMP

This stormwater management program plan is organized with an introduction/overview of WSDOT's stormwater management program provided in Section 1. The remainder of this document describes the essential program elements.

- Section 2 (Stormwater Program Management Framework) describes WSDOT's organizational framework and management responsibilities for overall permit compliance and program implementation. Section 2 also describes interagency coordination, key WSDOT stormwater-related guidance and procedures, WSDOT's legal authority to control discharges into its storm drainage systems, program planning, and the SWMP revision process.
- Section 3 (Construction Stormwater Pollution Prevention) describes construction-related stormwater pollution prevention. These elements include WSDOT's erosion control program as well as its spill prevention, control and countermeasures.
- Section 4 (Stormwater Management for New Facilities) describes post-construction stormwater management controls as prescribed by the *Highway Runoff Manual*.
- Section 5 (Stormwater Management for Existing Facilities) describes stormwater BMP retrofit program to address existing impervious surfaces that do not have treatment, or for which treatment is substandard.
- Section 6 (Maintenance) describes maintenance-related stormwater controls.
- Section 7 (Research/Monitoring) addresses WSDOT's stormwater-related research and monitoring programs to assist in refining the Department's stormwater management program over time.
- Section 8 (Education/Training/Public Involvement Programs) describes education programs for WSDOT employees and contractors, and the WSDOT permit's and SWMP's public involvement process.
- Section 9 (Program Assessment and Reporting) describes how WSDOT will assess and report on the effectiveness of the SWMP as well as its implementation progress of the SWMP.

1.3 Area and Facilities Covered

This SWMP applies to all discharge stormwater runoff from municipal separate storm sewer systems (MS4)¹ serving the state highways, rest areas, ferry terminals, maintenance areas, and other associated facilities within the applicable NPDES Phase I and II designated areas requiring permit coverage by Ecology. The SWMP also applies to all discharges into WSDOT's stormwater facilities governed by Washington State's *Underground Injection Control Program*.

1.4 Applicable Regulations

WSDOT is subject to several regulations related to stormwater discharges at both the federal and state level. These regulations are briefly described below.

1.4.1 Federal Water Pollution Control Act (33 U.S.C. §1251 et seq.)

Major amendments to the Federal Water Pollution Control Act (commonly known as the Clean Water Act) in 1987 addressed stormwater pollution by extending the National Pollutant Discharge Elimination System (NPDES) permit program to include stormwater discharges. The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 402 of the CWA governs the NPDES permit program and is the U.S. Environmental Protection Agency's (EPA) primary enforcement mechanism to ensure compliance with the CWA's provisions. EPA developed rules to implement the stormwater requirements in two phases. Phase I, promulgated in 1990, addresses stormwater runoff from: 1) MS4s generally serving populations of 100,000 or greater, 2) construction activity disturbing 5 acres of land or greater, and 3) ten categories of industrial activity. In 1999, Phase II expanded the program by requiring operators of MS4s in urbanized areas² and operators of small construction sites (1 to 5 acres) to implement programs and practices to control polluted stormwater runoff.

EPA regulations require NPDES permits for discharges from three broad categories of stormwater discharges:

- Municipal separate storm sewer systems (MS4s)
- Stormwater discharges associated with industrial activity
- Stormwater discharges associated with construction activity

¹ *Municipal Separate Storm Sewer Systems* (MS4s) is a conveyance or system of conveyances (including roads, with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

- i. Owned or operated by a state, county, city, town, or other public entity (created by or pursuant to state law) that discharges to waters of the state;
- ii. Designed or used for collecting or conveying stormwater;
- iii. Which is not a combined sewer; and
- iv. Which is not part of a Publicly Owned Treatment Works (POTW)

² Minimum residential population for 50,000 and minimum average density of 1,000 people per square mile.

WSDOT is required to obtain permits under all three of these categories. This SWMP addresses WSDOT activities as an operator of a MS4 (primarily drainage systems associated with highways and transportation-related facilities). Previous MS4 permits only addressed WSDOT activities in the Puget Sound basin (these previous permits are described in section 1.4.1 below). Changes to EPA regulations in 1999 required WSDOT to expand the areas regulated.

As an MS4, WSDOT is required to develop and implement a stormwater management program to the “maximum extent practicable” (MEP). MEP is a technology-based control standard under the Clean Water Act used in municipal stormwater permits against which permit writers and permittees assess whether or not an adequate level of control has been achieved. EPA has not defined the MEP standard, however in EPA’s Phase II regulation, the agency described the MEP standard as an iterative process whereby the permittee implements best management practices (BMPs) described in their SWMP, evaluates the effectiveness of those BMPs, and modifies the SWMP and BMPs if necessary to meet MEP. WSDOT’s implementation of this SWMP in accordance with the NPDES permit is intended to meet the MEP standard.

The only WSDOT facility required to obtain an industrial stormwater permit is the Washington State Ferries Eagle Harbor Repair Facility (permit number SO3001066). This facility has developed and is implementing a stormwater pollution prevention plan and a monitoring plan.

WSDOT is also required to obtain permit coverage under the sand and gravel general permit issued by Ecology for sand and gravel operations, rock quarries and similar mining activities, including stockpiles of mined materials, concrete batch operations, and hot mix asphalt operations.

All WSDOT construction projects disturbing at least one acre of land are required to obtain an NPDES construction stormwater permit from Ecology. This permit requires the construction project to develop and implement a stormwater pollution prevention plan (SWPPP). NPDES construction permits and SWPPPs are developed individually for each project, but generally follow the program outlined in *Section 3* of this SWMP.

The CWA allows EPA to delegate NPDES permitting authority to states that have approved regulatory programs. In Washington State, EPA delegated administration of the federal NPDES program to the Department of Ecology, which serves as the permitting authority. However, EPA retains authority to approve, reject, issue, monitor, and enforce NPDES permits in Washington.

1.4.2 Washington State Stormwater Regulations

Puget Sound Highway Runoff Program (WAC 173-270)

In 1987, the Puget Sound Water Quality Authority issued the Puget Sound Water Quality Management Plan. This plan called for a Highway Runoff Program, which was subsequently developed in detail by Ecology and codified in Chapter 173-270 of the Washington Administrative Code (WAC). This regulation established the basis for the management of stormwater runoff from transportation infrastructure to protect water quality in the Puget Sound basin. It required the WSDOT to develop its *Highway Runoff Manual* that is consistent with Ecology's stormwater management manuals. In most instances, local stormwater management requirements will not override the requirements in the *Highway Runoff Manual*. See Section 4.2 for instances where more stringent stormwater management requirements may apply.

The regulation also requires the maintenance of a Vegetation Management Program that addresses the operational, public health, environmental and economic concerns related to roadside application of pesticides and fertilizers. The Vegetation Management Program includes best management practices such as integrated pest management, spill prevention plans, and employee training, as well as monitoring and reporting procedures.

The regulation requires WSDOT to implement BMPs for new construction projects and inventory existing facilities to determine where BMPs need to be installed. BMP effectiveness and pesticide monitoring are also provisions under this regulation. In addition, the regulation requires WSDOT to report monitoring results to Ecology along with a description of WSDOT's BMP maintenance activities, pesticide and deicing chemical use, and any cleanup requirements for soil or water contamination resulting from pesticide use.

Waste Discharge General Permits (WAC 173-226)

This state regulation establishes a state general permit program in Washington applicable to the discharge of pollutants, wastes and other materials to waters of the state. General permits issued are designed to satisfy the requirements of both the federal CWA and the state law governing water pollution control (90.48 RCW). WAC 173-226-020 states that: "no pollutants shall be discharged to waters of the state from any point source, except as authorized by an individual permit or a general permit."

General permits are available for groups of discharges within an area, and may be issued either to stormwater sources or to categories of discharges that are deemed sufficiently similar. The permit requires compliance with technology-based treatment requirements and, where applicable, water quality-based effluent limitations. Additional measures may be required as necessary to meet water quality standards, meet TMDL reductions, or fulfill other regulatory requirements.

Permittees are subject to monitoring, recording and reporting requirements. Permits authorize a specific level and frequency of discharge, and require that modifications to facilities that result in an increase in that discharge be reported.

Definition of AKART (WAC 173-201A-020)

“AKART” is described in the Waste Discharge General Permit regulation as an acronym for “all known, available, and reasonable methods of prevention, control and treatment.” It is defined as “the most current methodology that can be reasonably required for preventing, controlling or abating the pollutants associated with a discharge” and applies to both point and non-point sources of pollution. Best management practices are a subset of AKART requirements.

Additional State Regulations

Additional state regulations applicable to stormwater include:

- Implementation of Total Maximum Daily Load (TMDL) plans by Ecology and local partners, resulting in limitations on pollutants in stormwater discharges. (TMDLs are addressed in Section 303(d) of the Clean Water Act.)
- Conditions of the underground injection control (UIC) program (Chapter 173-218 WAC). The UIC program, administered by Ecology to implement provisions of the federal Safe Drinking Water Act, applies to subsurface drainage facilities that discharge water to the ground (e.g., drywells).
- Site-specific Section 401 (of the Clean Water Act) Water Quality Certifications issued by Ecology in relation to projects that require federal Section 404 permits for in-water work or projects subject to Section 9 and 10 of the Rivers and Harbors Act (i.e., Coast Guard permits). Section 404 of the Clean Water Act provides federal regulatory protection for wetlands.³
- Conditions of aquatic lands use authorizations. The aquatic lands use authorization is administered by the Washington State Department of Natural Resources and may apply to stormwater outfalls (Chapter 79.90 through 96 RCW and Chapter 332-30 WAC).
- State Surface Water Quality Standards (Chapter 173-201A WAC).

1.5 Permit History

1.5.1 Previous Phase I Municipal Stormwater General Permits

WSDOT was previously covered under three separate MS4 stormwater permits in the Puget Sound Basin. These permits, issued in 1995, were administratively extended until the issuance of WSDOT’s NPDES permit. These permits covered stormwater discharges from WSDOT facilities in the following areas:

- Cedar/Green Water Quality Management Area

³ Ecology has determined that in most circumstances the 401 Water Quality Certifications will refer to WSDOT’s statewide 402 municipal stormwater permit for post-construction stormwater requirements.

- WSDOT facilities in the City of Seattle and portions of King County, Snohomish County, and Kitsap County.
- Island/Snohomish Water Quality Management Area
 - WSDOT facilities in portions of King County and Snohomish County.
- South Puget Sound Water Quality Management Area
 - WSDOT facilities in City of Tacoma and portions of Pierce County and King County.

WSDOT developed a stormwater management plan in March 1997 to meet the requirements of these general permits. WSDOT also submitted annual reports to Ecology describing WSDOT activities to implement and comply with the general permits.

1.5.2 WSDOT's Municipal Stormwater Permit

To replace WSDOT's Phase I general permits described above and to address requirements under Phase II of the stormwater program, Ecology issued a municipal stormwater permit to WSDOT on {*insert month, year*}.

Note: A summary of the new MS4 permit requirements will be included here after the permit is issued by Ecology.

1.5.3 Construction Stormwater General Permit

Beginning in 1995, WSDOT construction projects were also required to comply with the Ecology NPDES requirements specific to construction activities. The threshold for a site disturbance area that typically triggered an NPDES Construction Stormwater General Permit was five acres. Some large WSDOT projects with particularly sensitive environmental concerns are required to obtain individual NPDES construction stormwater permits from Ecology. NPDES construction stormwater permits require detailed documentation and implementation of temporary erosion and sediment control measures and other pollution prevention and control measures.

On November 16, 2005, Ecology issued a new construction stormwater general permit that dropped the permitting threshold from five acres down to one acre of soil disturbance. This permit also includes new monitoring and reporting requirements for construction projects. WSDOT will continue to apply for coverage under the construction stormwater general permit for all projects disturbing at least one acre.

1.5.4 Industrial Stormwater General Permit

The only WSDOT facility subject to and covered under Ecology's Industrial Stormwater General Permit is the Washington State Ferries (WSF) Eagle Harbor maintenance facility located on Bainbridge Island, Washington. The facility provides maintenance services for WSF including twenty-four vessels and 19 terminals. The five-acre site consists entirely of impervious surfaces with approximately 15 percent of the area under the cover of roofs.

The General Permit requires that the facility develop and maintain a current Stormwater Pollution Prevention Plan (SWPPP) and a Water Quality Monitoring Plan (WQMP). The goal of these two management plans is to identify, prevent, reduce, or eliminate the

pollution of receiving waters through the application of best management practices (BMPs) as well as develop and implement a stormwater monitoring program for the facility. The SWPPP summarizes the operational, source control, and treatment BMPs that are in place at the facility. The WQMP describes the analytical and visual stormwater monitoring objectives, procedures, and requirements for the facility. This includes selecting sampling locations, sampling equipment, conditions for sampling, detailed sampling procedures, requirements for sample analysis, and data reporting. The WQMP also describes dry season inspections and visual monitoring that will be conducted.

1.5.5 Sand and Gravel General Permit

WSDOT is also subject to the Sand and Gravel General Permit issued by Ecology on January 5, 2005. This permit controls the discharge of pollutants from sand and gravel mining operations and related facilities into waters of the state.

Section 2: Stormwater Program Management Framework

2.1 Internal Coordination and Stormwater Management Responsibilities

The Department's Headquarter Offices, its six Regions, the Urban Corridors Office (UCO), and the Washington State Ferries (WSF) have been assigned functional responsibilities associated with the stormwater management program. Directives from Headquarter Offices, in consultation with WSDOT's Stormwater Policy Committee (SPC), are responsible for initiating implementation of the SWMP.

The SPC was created to assist WSDOT regarding stormwater management policy issues as well as provide a framework for communication, coordination, and cooperation in the development and implementation of the SWMP. Chaired by the Environmental Services Office Resources Programs Branch Manager, the SPC meets at least quarterly. The SPC members include representatives from WSDOT Regional Offices, UCO, WSF, and Headquarters Offices required to commit or expend resources related to stormwater management. SPC duties and responsibilities include:

1. Guiding the agency in conducting deliberations with permitting agencies and making decisions regarding stormwater management policy (e.g., NPDES permit development, stormwater/Endangered Species Act consultation issues, etc.).
2. Providing recommendations to executive management on preferred approaches to meet regulatory obligations.
3. Guiding preparation of the Stormwater Management Program (SWMP) and the biannual stormwater work plan by making recommendations regarding:
 - Funding, staffing, and other resources necessary to support their development and implementation
 - The roles and responsibilities of all regions, modes, and WSDOT offices that will be essential for their successful implementation.
 - How WSDOT will carry out stormwater-related work or, if that is not possible, suggest priorities on what should be done so the risks and downsides are understood.
4. Promoting and providing ongoing evaluation of the SWMP's effectiveness.
5. Improving communication among affected workgroups in regions, modes, and WSDOT offices required to commit or expend resources on stormwater.
6. Assisting in the resolution of stormwater-related problems and conflicts.

The organizational charts in Appendix A (Figures A-1 through A-13) illustrate the chain of responsibilities for SWMP implementation. The Headquarters and field offices/branches with primary stormwater management implementation responsibility appear bolded.

Headquarter office's responsibilities generally lie in areas of program and policy development, oversight, technical assistance, research, and monitoring and reporting. The Environmental Services Office's (ESO) Water Quality Program (Figure A-3) has the overall responsibility for managing the stormwater management program (SWMP). The ESO Water Quality Program has responsibility for guidance and coordination of the SWMP program policy development, monitoring, and reporting and is primarily responsible for compliance with the NPDES stormwater permit. The Design Office's (Figure A-4) Hydraulics Branch is primarily responsible for providing technical support on hydraulics and hydrology issues to WSDOT headquarters and regional offices. Environmental support staff in the Maintenance and Operations Division's (Figure A-5) is responsible for technical support and implementation of stormwater-related maintenance activities, in coordination with the regions.

The Regions and Washington State Ferries have the responsibility for implementing the SWMP in the field. Washington State Ferries (Figure A-6) is responsible for all stormwater management activities at ferry terminals. The Region's primary stormwater management implementation responsibilities fall in the areas of meeting stormwater-related construction- and post-construction requirements including related ongoing operations and maintenance.

2.2 Intergovernmental Coordination

The following section describes how WSDOT coordinates with various groups on stormwater and other water quality issues. As appropriate, WSDOT will work with these groups to help coordinate the implementation of this SWMP.

2.2.1. Maintenance Coordination

WSDOT allocates maintenance responsibilities between WSDOT and Washington cities according to a memorandum of understanding signed with the Association of Washington Cities (*City Streets as Part of State Highways – Guidelines reached by WSDOT and AWC on the Interpretation of Selected Topics of RCW 47.24 and Figures of WAC 468-18-050 for the Construction, Operation, and Maintenance responsibilities of WSDOT and Cities for such streets*, April 30 1997). WSDOT's maintenance program and activities are further described in Section 6 of this SWMP.

2.2.2. Resource/Regulatory Agency Staff Liaisons

Placing staff in resource agencies is part of a WSDOT and the Federal Highway Administration's effort to improve transportation project planning, permitting, and project delivery. Since 1999, the Resource Agency Project Liaison Program has provided staff dedicated to the delivery of transportation project improvements at several state and federal resource agencies. This program provides specialists to work only on WSDOT

and local agency transportation projects and issues such as early coordination on transportation permits, Endangered Species Act (ESA) concurrence, and environmental review. Some liaison positions are filled with WSDOT staff based at the resource agency while others are resource agency staff funded by WSDOT.

WSDOT has project liaisons in the following agencies:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. National Oceanic and Atmospheric Administration Fisheries Service
- Washington State Department of Ecology
- Washington State Department of Fish & Wildlife

2.2.3. Tribal Liaisons


The WSDOT's Tribal Liaison Office was established in 2001 and has responsibility for assisting tribes and the department with implementing effective government-to-government relations.

2.2.4. Transportation Permit Efficiency and Accountability Committee (TPEAC)

WSDOT is a key participant on the Transportation Permit Efficiency and Accountability Committee (TPEAC), which is responsible for creating a sustained focus on achieving both the transportation and environmental goals of the state while expediting environmental regulatory processes. TPEAC created six sub-committees to comprehensively address permit streamlining. One of these sub-committees, the Watershed-based Mitigation Sub-committee, focuses on watershed-based mitigation, an important tool for stormwater management.

In April 2001, the state legislature passed a Permit Streamlining Bill (ESB 6188 - TPEAC) that, among other things, created several additional liaison staff positions. These staff work on transportation project streamlining and represent their respective agencies on the TPEAC subcommittees such as the One-Stop Permitting, Programmatic Approvals and Watershed-Based Mitigation.

2.2.5 Water Quality Implementing Agreement

The Water Quality Implementing Agreement (WQIA) was adopted by WSDOT and Ecology in 1998 as a supplement to the agencies' Memorandum of Agreement (MOA), which establishes the basis for interagency coordination of environmental information and permit review. The WQIA describes specific procedures to enhance coordination and cooperation and to assist WSDOT in complying with state Water Quality Standards. It outlines in detail WSDOT's requirements for meeting standards and the role of Ecology in expediting permit review and providing technical assistance. The full text of the agreement is available at: 

<http://www.wsdot.wa.gov/environment/Programmatics/docs/impagfin.pdf>.

WSDOT is currently working with Ecology to update the WQIA.

2.2.6 Watershed-based Approach to Stormwater Management

The major goal of WSDOT's watershed approach is to target high-priority watersheds to achieve the maximum ecological benefit with the most efficient use of funds. The watershed approach has facilitated partnerships with other agencies and community organizations as well as participation by WSDOT in the rulemaking process and in interagency committees. WSDOT staff participates in the 2514 Watershed Planning Act processes in watersheds where WSDOT is a stakeholder.

2.2.7. Puget Sound Action Team

The Puget Sound Action Team works with tribal and local governments, community groups, citizens and businesses, and state and federal agencies to develop and carry out two-year work plans that guide protection of water quality and biological resources in the Sound. The biennial work plans are based on the Puget Sound Water Quality Management Plan, Washington's strategy for protecting Puget Sound. Douglas MacDonald, Secretary of Transportation, represents WSDOT on the team. Additional information on the Puget Sound Water Team can be found on the following Internet site:

☞ <http://www.psat.wa.gov/>

2.3 Program Management

2.3.1 Key WSDOT stormwater guidance and procedures

The following provides a summary description of the key tools and guidance documents used by WSDOT for stormwater management.

Highway Runoff Manual

The *Highway Runoff Manual* (HRM) directs the planning and design of stormwater management facilities for existing and new state highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities throughout Washington State. The HRM establishes minimum requirements and provides uniform technical guidance for the avoidance and minimization of water resource impacts associated with the development of state-owned and operated transportation infrastructure systems, and for reducing and minimizing water resource impacts associated with the redevelopment of those facilities.

Conformance to the manual's provisions results in consistent design procedures statewide and to meet the level of stormwater management set forth by the Washington Department of Ecology (Ecology) in the stormwater management manuals for eastern and western Washington. The manual receives periodic updates to reflect advances in the management of stormwater runoff, roadside vegetation, and roadway maintenance practices. Additional information on the *Highway Runoff Manual* is included in Section 4 of this SWMP.

Hydraulics Manual

Many aspects of stormwater management for environmental protection relate to drainage collection and conveyance systems, culverts, drainage outfalls, and a variety of other hydraulic features. The *Hydraulics Manual* is dedicated in large part to addressing

analysis and design of those hydraulic features. The *Hydraulics Manual* and *Highway Runoff Manual* are used in tandem for analyzing and designing stormwater facilities for roadway and other transportation infrastructure projects.

Maintenance Manual

This manual provides WSDOT maintenance personnel with guidance on how to conduct the wide variety of activities performed within the Maintenance Program. The primary activities described that are related to stormwater concerns include: roadside maintenance, drainage facilities (e.g. ditches, dry wells, culverts and detention ponds), snow and ice control, and pavement repair.

Environmental Procedures Manual

The *Environmental Procedures Manual* (EPM) provides guidance for complying with federal, state, and local environmental laws and regulations during the planning, designing, constructing, and maintaining of transportation facilities in Washington State. The manual is primarily a technical resource focused on the “how to” of environmental review under various laws and regulations. In addition to technical guidance, the manual provides background information on environmental laws and WSDOT policy statements to aid in interpreting the numerous mandates.

Utilities Manual

The *Utilities Manual* provides guidance regarding work associated with utilities located within the state right-of-way so as to not interfere with the traffic flow and safety or impair the highway visual quality for the motorist. Chapter 1, Section 18 – *Storm Drainage* specifies that surface runoff from property outside of the state right-of-way can only be discharged into WSDOT’s highway drainage system if it meets certain conditions. Among these conditions include the obligations that discharges meet the requirements in the *Highway Runoff Manual* as well as that the utility agrees to comply with existing and future state and local requirements and assume all costs and liabilities associated with the design, construction, maintenance and operation of stormwater management facilities. WSDOT Regions review utility permit applications to ensure they meet these requirements.

Construction Manual

The *Construction Manual* provides fundamental guidance regarding the objectives, procedures, and methods associated with transportation construction projects as well as in assisting in identifying laws and policies that may affect the construction administration work. This manual is typically used in conjunction with the contract, contract provisions, and the *Standard Specifications*. Chapter 7 entitled *Drainage Structures, Storm Sewers, and Conduits* provides information regarding general instructions, designs, installation, and/or measurements and payments for drains, culverts, storm sewers, manholes and catch basins, and structural plate pipes, pipe arches, arches, and underpasses. The following chapters of the manual also provide reference material related to stormwater management:

Chapter 1 – Administration (Environmental Compliance Procedures are referenced in the Construction Manual in Sections 1 – 2.2J and 1 – 2.2 K)

Chapter 9 – Materials

Chapter 10 - Documentation

Design Manual

The *Design Manual* provides guidance regarding standard policies, procedures, and methods to be used while developing and documenting the design improvements to the transportation infrastructure. This manual may be used to assist in defining the scope and level of effort for each WSDOT design project. The following divisions of the manual contain chapters that may be used as reference material for stormwater management:

Division 1 – General Information

Division 2 – Hearings, Environmental, and Permits

Division 3 – Project Documentation

Division 4 – Project Design Criteria

Division 5 – Soils and Paving

Division 11 - Structures

Division 12 - Hydraulics

Division 13 – Roadside Development

Instructional Letters

Instructional letters (IL) are used when interim guidance is required between updates of WSDOT's guidance manuals. While there are currently no IL's related to stormwater management, this tool is available to communicate future updates to policies or procedures related to stormwater.

Standard Specifications for Road, Bridge, and Municipal Construction

WSDOT's *Standard Specifications* provides the default contract language for all WSDOT construction projects. It describes established standards and engineering practices for WSDOT construction activities and addresses stormwater management related activities associated with earthwork, drainage structures, and erosion control. *The Standard Specification* reflects years of refinement based on performance and legal decisions. WSDOT staff as well as our Industry partners, through the Joint WSDOT/Associated General Contractors Standing Committees, review all new *Standard Specifications*.

2.3.2 Information Management

WSDOT works with appropriate federal, state and other agencies to maintain a collection of the best available data for statewide environmental analysis.

WSDOT's *Geographic Information System (GIS) Workbench* provides users with simplified access to analysis tools and geospatial data useful in stormwater management. Project scoping staff can use the *GIS Workbench* to quickly identify a wide variety of

environmental features such as impaired water bodies, contaminated sites, historic sites, or wellhead protection zones and inform the project design team of needed mitigation or permits. The *GIS Workbench* allows WSDOT staff to easily locate proposed projects, highlight buffer areas around the project, and display relevant environmental information near the project.

WSDOT also provides GIS information to the public through its *GeoData Distribution Catalog* (☞ <http://www.wsdot.wa.gov/mapsdata/geodatacatalog/default.htm>). Geospatial data available include transportation features, political and administrative features, and environmental features such as stormwater outfalls along state routes.

State Route View (SRView), another tool for preliminary site assessments, allows WSDOT employees to view digital images of the state highway system at 1/100th mile increments. With *SRView*, WSDOT staff can virtually travel on the road and view information in the *State Highway Log* (☞ <http://www.wsdot.wa.gov/mapsdata/tso/statehighwaylog.htm>).

Additional databases with stormwater-related information include the *Highway Maintenance Management System*, the *ESA Compliance Database*, and the *Integrated Vegetative Management Database* developed by Maintenance and Operations. The *Stormwater Facilities Inventory Database* collects information for the retrofit program. The *Qualified Products List* is a database of materials and devices that can be used by WSDOT and WSDOT contractors. The erosion control program participates on the New Products Committee and evaluates the suitability of products that could either impact or improve water quality. Each of these databases and information management tools are described in more detail in subsequent sections.

WSDOT has initiated the *Roadside Features Inventory Program* as a long-term effort to catalog all roadway features into a linked database. The *Roadside Features Inventory Program* will include stormwater facilities as a component by integrating all stormwater management-related databases into this master database.

2.3.3 Illicit Discharge Detection and Elimination

WSDOT's illicit discharge detection and elimination program is designed to identify and eliminate *illicit discharges* and *illegal connections* to WSDOT's MS4. An *illicit discharge* is a point source discharge of pollutants to the MS4 that is not comprised entirely of stormwater and is not authorized by an NPDES permit. Illicit discharges can include wash water, sediment, spilled chemicals, or a sewage spill to the MS4. An *illegal connection* is a pipe or other conveyance that has illegally been connected to WSDOT's MS4.

This section only addresses procedures for illicit discharges that are not classified as hazardous. For any identified illicit discharges that are potentially hazardous, WSDOT staff should contact the ESO's Hazardous Materials Program, or in the event of an immediate threat, contact 911.

Because of limited access to the MS4, WSDOT does not typically encounter many illegal connections to its systems. While WSDOT expects illicit discharges and illegal connections will be primarily identified by maintenance or construction staff, field staff inventorying stormwater facilities also looks for illicit discharges and illegal connections in the drainage system.

In general, not all discharges to WSDOT's MS4 are illicit. Discharges from an NPDES-permitted source (not expected in WSDOT's MS4) and discharges from fire fighting activities are allowed under Environmental Protection Agency's regulations. Other non-stormwater discharges are allowed unless WSDOT identifies them as a significant contributor of pollutants to the MS4. These are generally not considered illicit discharges and include:

- Landscape irrigation
- Lawn watering
- Diverted stream flows
- Irrigation return flow
- Rising ground waters
- Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20))
- Uncontaminated pumped ground water
- Springs
- Flows from riparian habitats and wetlands
- Water line flushing
- Discharges from potable water sources
- Foundation drains
- Air conditioning condensation
- Water from crawl space pumps
- Footing drains
- Individual residential car washing
- Dechlorinated swimming pool discharges
- Street wash water

Illicit Discharge Identification

The identification of illicit discharges relies primarily on field observations. WSDOT staff uses the following field observations to identify potential illicit discharges:

- Visible signs of staining, residues, or oily substances in the water or detained within ditches, channels, catch basins, or surrounding pavement and soils.
- Pungent odors coming from the drainage system (e.g., discharge smells like sewage, sulfide, petroleum/gas, rancid, etc.)
- Discoloration or oily substances in the water
- Abnormal water flow during the dry weather season.
- Excessive sediment deposits or turbid waters, particularly near active off-site construction sites
- Floatables (e.g., discharge includes sewage, an oil sheen, suds, etc.)
- Broken concrete or other disturbances at or near junction structures

For reporting purposes, these observations should be documented along with the date, time, location of discharge, and estimated quantity of the discharge along with any additional information describing the discharge. See section 6.4, Spill Prevention and Containment, for additional information.

Notification Process

WSDOT construction staff who discover an illicit discharge or illegal connection are instructed to follow the procedures described in IL 4055.02 “*Environmental Compliance Assurance Procedures for Construction Projects and Activities Instructional Letter*” and in the Construction Manual, Section 1-2.2K(1). The notification process begins by notifying the project engineer, who must then immediately notify the contractor and the Regional Environmental Manager.

WSDOT Maintenance staff that discover an illicit discharge or illegal connection are instructed to contact their Maintenance Supervisor and the Regional Maintenance Environmental Coordinator (RMEC). Depending on the severity of the discharge, the RMEC may contact the Regional Environmental Manager, Regional Administrator, Ecology, Washington State Patrol, or local officials such as the fire department. The RMEC or their designee will determine the ultimate actions when an illicit discharge is identified.

As specified in the *Water Quality Implementing Agreement* between Ecology and WSDOT, spills into state waters, spills onto land with a potential for entry into state waters, or other significant water quality impacts such as distressed or dead fish noticed in the project vicinity shall be reported immediately to the Ecology Regional Office. The 24-hour telephone reporting numbers for each Ecology Regional Office are:

Central Region	(509) 575-2490
Eastern Region	(509) 456-2926
Northwest Region	(425) 649-7000
Southwest Region	(360) 407-6300

Illicit Discharge Remediation

Where possible, WSDOT staff will seek to identify the source of the illicit discharge. This could involve following the discharge upstream in the drainage system or identifying the storm drainpipe from which the discharge is occurring. If the source is originating outside of WSDOT right-of-way, then staff should identify the City/County responsible for this area where the discharge is originating.

In most cases, remediation and clean up of illicit discharges should be conducted by the responsible party. If practical, WSDOT staff should place sand bags or other barriers to try to contain the discharge and prevent the discharge from entering waters of the State.

2.3.4 Legal Authority

Title 47 of the Revised Code of Washington, Public Highways and Transportation, provides the Department with legal authority adequate to meet the requirements of 40 CFR § 122.26(d)(1)(ii) to control discharges to municipal separate storm sewer systems WSDOT owns or operates. RCW 47.01.260 provides:

The department of transportation shall exercise all powers and perform all duties necessary, convenient, or incidental to the planning, locating, designing, constructing, improving, repairing, operating, and maintaining state highways, including bridges and other structures, culverts, and drainage facilities and channel changes necessary for the protection of state highways....

RCW 47.04.040 vests in the State of Washington all right, title, and interest to the rights-of-way of state highways, including the roadway and ditches and existing drainage facilities, together with all appurtenances thereto.

The Department possesses the legal authority adequate to prohibit illicit discharges to its storm sewer system. Chapter 47.32 RCW empowers the Department to operate state highways free from all obstructions, encroachments, occupancy, and public nuisances. RCW 47.32.010 authorizes the Department, upon due notice, to order obstructions, encroachments, structures, buildings, improvements, or other means of occupancy of any right-of-way to the state highway to be removed within ten days. Failure to so remove the offending property results in the property becoming unlawful property, which the Department may confiscate, remove, sell or destroy.

RCW 47.32.130(1) provides:

Whenever there exists upon the right-of-way of any state highway or off the right-of-way thereof in sufficiently close proximity thereto, any structure, device, or natural or artificial thing that threatens or endangers the state highway or portion thereof, or that tends to endanger persons traveling thereon, or obstructs or tends to obstruct or constitutes a hazard to vehicles or persons traveling thereon, the structure, device, or natural or artificial thing is declared to be a public nuisance, and the department is empowered to take such action as may be necessary to effect its abatement. Any such structure, device, or natural or artificial thing considered by the department to be immediately or eminently dangerous to travel upon a state highway may be forthwith removed, and the removal in no event constitutes a breach of the peace or trespass.

Thus, illicit discharges to the Department's storm sewers would constitute encroachments that the Department can remove. Discharge of pollutants into the Department's storm sewer system, even if emanating off the right-of-way if in sufficiently close proximity to jeopardize the Department's system, would constitute a public nuisance that the Department is empowered to abate.

The Washington State Patrol (WSP) has general authority for the administration and enforcement of traffic and other laws on state highways. RCW 46.48.170 authorizes the WSP to adopt and enforce regulations concerning the transportation of hazardous materials. Chapter 446-50 WAC contains these regulations, consistent with those promulgated by the United States Department of Transportation, Title 49 CFR parts 100 through 199, designed to protect persons and property from unreasonable risk of harm or danger. The Department, in conjunction with the WSP, has the authority to address spills, dumping, or disposal of materials other than stormwater on state highways.

WSDOT controls construction work through contract provisions. Standard provisions and specifications require that contractors comply with all applicable federal, state, and local regulations, including obtaining required permits and licenses. WSDOT requires contractors to submit and implement erosion and sediment control plans and spill prevention, control, and countermeasures plans.

WSDOT lacks general authority to regulate activities occurring outside its right-of-way. However, where a proposed development requires a utility permit or franchise from WSDOT or an access connection permit to the state highway, the Department may add conditions to the permit regarding stormwater flow and quality. WSDOT can also request the help of local and state agencies, which have legal enforcement authority to conduct inspections and investigations outside of the right-of-way, if necessary, to detect and eliminate illicit discharges.

Furthermore, the Department requires a utility permit and/or franchise for all stormwater drainage or utility connections from private and public property onto state highway right-of-way. WSDOT's *Utilities Manual* outlines procedures for obtaining such permits. Utilities or jurisdictions which have pipes, culverts, or ditches conveying sources other than stormwater or natural base flow shall not be granted a utility permit or franchise for conveyances using WSDOT storm sewer systems, including roadside ditches. Those utilities or jurisdictions discharging to WSDOT storm sewer systems or natural base flow originating off the right-of-way must provide the Department water quantity and quality controls, including conveyances which conform with requirements and specifications in the *Highway Runoff Manual*; Department of Ecology requirements; or local rules, regulations, ordinances, and resolutions, whichever is more stringent.

2.3.5 Local/Area Specific Requirements

The following are major local/area specific requirements that WSDOT will comply with through coordination with this SWMP.

Total Maximum Daily Loads

The Total Maximum Daily Load (TMDL) or Water Cleanup Plan process, established by Section 303(d) of the Clean Water Act (CWA), requires states to identify sources of pollution in waters failing to meet state water quality standards and to develop Water Cleanup Plans to address those pollutants. The Water Cleanup Plan (TMDL) establishes limits on pollutants that can be discharged to the water body and still meet state water quality standards. At the time of issuance, Ecology may establish specific NPDES permit

requirements in association with an EPA-approved approved TMDL involving stormwater discharges from MS4s owned and operated by WSDOT. For TMDLs approved by EPA after permit issuance, Ecology may establish TMDL-related permit requirement through future permit modifications, administrative orders, or upon permit reissuance.

WSDOT intends to actively participate in the TMDL process in cases where WSDOT facilities or operations are identified as important contributing sources to the pollutant being characterized. Should such instances arise, WSDOT will be involved in the early stages of the TMDL or local planning process to develop the water clean-up plan. This activity will be coordinated through WSDOT's regional offices.

Shoreline Management Act

The Shoreline Management Act (SMA), RCW 90.58, requires local governments to develop "shoreline master programs" that regulate rivers and larger streams, lakes over 20 acres, and marine waterfronts. These local programs include both plans and regulations for achieving the level of protection of shorelines based on state guidelines, but tailored to meet specific community needs. The plans are a comprehensive vision of how shoreline areas will be used and developed over time. Regulations are the standards that shoreline projects and uses must meet. WSDOT's compliance with SMA rules and the conditions of local shoreline master programs is achieved during the project planning and design phase and through submittal of the required permits.

Critical Area Ordinances

The Growth Management Act (RCW 36.70A.060) requires all local governments to adopt and enforce *critical areas ordinances* and, more recently, to meld these with SMA requirements. Critical areas ordinances are a set of development regulations that protect wetlands, stream corridors, fish and wildlife habitat, potable water groundwater recharge areas, flood plains, and geological hazards. WSDOT's compliance with critical area ordinances is achieved during the project planning and design phase through submittal of the required permits and negotiations in project design and mitigation measures.

Endangered Species Act

The Endangered Species Act (ESA) requires that a biological evaluation be conducted to determine potential project impacts on threatened or endangered species, including impacts associated with stormwater. Stormwater management measures implemented at many WSDOT sites have been shaped by requirements necessary to avoid, minimize, or reduce potential impact to threatened and endangered species under the ESA. The ESA's Section 7 consultation process, requiring federally funded or authorized actions to be evaluated to determine the level of effect it will have on listed species, serves as the primary ESA compliance pathway for WSDOT projects.

The *Highway Runoff Manual* includes guidance to support WSDOT in its efforts to comply with ESA requirements. The manual's guidance includes a stormwater design checklist to assist WSDOT project designers in providing pertinent information about a

project's stormwater treatment facilities and erosion control measures to biologists preparing biological assessments required for consultation under Section 7.

2.3.6 Program Planning

Biannual Stormwater Work Plan

Note: WSDOT's Stormwater Policy Committee will prepare a biannual stormwater work plan. The work plan will address the funding, staffing, and other resources necessary to support development and implementation of the SWMP. It will also identify SWMP priorities.

Implementation Timeline

Note: The Stormwater Policy Committee will develop an implementation timeline in conjunction with the *Biannual Stormwater Work Plan*.

2.4 SWMP Revision Process

The Stormwater Policy Committee will promote and provide ongoing evaluation of the SWMP's effectiveness. In the process of compiling and evaluating information for the Annual Report, the ESO's Water Quality Program may identify trends, common problems, or solutions that may spur the need to revise the SWMP. The SWMP would be revised, as necessary, to maintain an effective stormwater management program that incorporates advancements in stormwater management and lessons learned. Revisions to the SWMP may also be initiated at the request of the Department of Ecology. Annual Reports submitted to Ecology will serve as the vehicle for describing and justifying WSDOT-proposed SWMP changes.

Note: The NPDES Permit will define what constitutes major changes to the SWMP, but the following is suggested based on the existing permit:


Major changes to the SWMP will require approval from Ecology. The following changes to the SWMP would constitute major changes:

- A greater than 20 percent reallocation or reduction of funds in the biennial overall stormwater management program budget not associated with highway construction.
- An anticipated delay of one year or more in meeting an implementation-related performance benchmark
- A change or elimination of a program component that would trigger the need to alter or eliminate a performance benchmark

Section 9 of the SWMP contains additional detail on program assessment and reporting.

Section 3: Construction Stormwater Pollution Prevention

3.1 Erosion Control Program

Preventing and controlling erosion from construction sites is a high priority for WSDOT. The primary focus of construction stormwater planning is to prevent sediment and other pollutants associated with construction activity from impacting soil, air, and water quality. The Erosion Control Program maintains an Internet site describing training, technical assistance and compliance assurance information available at:  <http://www.wsdot.wa.gov/environment/wqec/erosion.htm>.

3.1.1 Technical Guidance and Standards

Highway Runoff Manual

WSDOT has developed a comprehensive program to address stormwater runoff from construction activity primarily through the *Highway Runoff Manual*. Chapter 6 of the *Highway Runoff Manual* provides guidance for preparing temporary erosion and sediment control (TESC) plans. It also includes guidance for selecting appropriate erosion and sediment control (ESC) BMPs. Operation and maintenance of these BMPs are also discussed.

Appendix 6A of the *Highway Runoff Manual* includes BMP descriptions, applicable contract specifications and standards plans, design criteria and other pertinent information to assist designers in selecting the best combination of erosion and sediment control BMPs for a given project. Appendix 6B of the *Highway Runoff Manual* provides guidance on water quality sampling and reporting procedures for those projects required to monitor runoff quality and/or receiving water effects during construction.

Construction Manual


The *Construction Manual* provides guidance as to the objectives, procedures and methods for construction administration at WSDOT. *Section 2-3.4, Temporary Water Pollution/Erosion Control*, addresses general requirements relating to erosion control and contractor work and payment.

Standard Specifications

Section 8-01 of the WSDOT's *Standard Specifications* includes the language used to enforce contractual erosion control and water quality protection requirements. The specifications include general construction requirements like seasonal limits on clearing and grading, training and inspections requirements for Erosion and Sediment Control Leads, and detailed specifications for erosion control BMPs.


Qualified Products List

The Qualified Products List (QPL) contains approved erosion and sediment control products available to WSDOT engineers. The list provided by the Materials Laboratory as a resource of available commercial products, but must still be selected based on site

conditions and constraints. Information on the QPL is available at:  <http://www.wsdot.wa.gov/biz/mats/QPL/QPl.cfm>.

3.1.2 Certification

Construction site erosion and sediment control certification is required for WSDOT personnel responsible for designing or implementing TESC plans and for contractor Erosion and Sediment Control Leads that implement the plans. To become certified, one must complete training in Construction Site Erosion and Sediment Control in a WSDOT-approved course. Re-certification training is required every three years. Certification training ensures that the people who design and implement the TESC plan understand the requirements of WSDOT's Erosion Control Program.

Information on the certification requirements is available at:  http://www.wsdot.wa.gov/environment/wqec/wqec_training.htm.

3.1.3 Inspections

WSDOT requires that contractors inspect BMPs at least once every five working days and each working day during a runoff producing rain event and within 24 hours of the event. The inspection requirements are specified in Section 8-01.3(1)B of the Standard Specifications. A TESC Inspection Report is prepared for each inspection and included in the TESC file for that project.

3.1.4 Information Management


Training

WSDOT's Human Resource Office's Staff Development Program maintains a training matrix and database to track training needs and accomplishments. The Erosion Control program uses the database to ensure that all project offices maintain teams of qualified staff at all times. The Erosion Control Program also utilizes a database to track certification status for contractor Erosion and Sediment Control Leads. Certification status, as required by WSDOT Standard Specifications 8-01.3(1)B, is checked when contracts are let. WSDOT also performs annual statewide verifications to ensure that all contractor certifications remain current.

Statewide Erosion Plan Implementation and Effectiveness Assessment

Each October WSDOT's ESO Water Quality Program performs a statewide erosion control plan implementation and effectiveness assessment for all active construction projects with moderate to high-risk of erosion. Performance measures evaluated include: thoroughness of original erosion control plans, implementation of the erosion control plan elements, responsiveness to changing field conditions, and BMP effectiveness. Water quality data collected, in accordance with Appendix 6B of the *Highway Runoff Manual*, is used to track how effectively erosion control plans and BMPs protect water quality. Erosion control plan implementation and water quality monitoring data are collected and evaluated jointly using a database that provides a mechanism to help continually improve and enhance the effectiveness of the Erosion Control Program.

3.2 Spill Prevention, Control, and Countermeasures

Contractors are required to prepare Spill Prevention Control and Countermeasures (SPCC) plan for all construction projects. The Hazardous Materials Program maintains an Internet site describing technical guidance and training at: 

http://www.wsdot.wa.gov/environment/hazmat/haz_spcc.htm.

3.2.1 Technical Guidance and Standards

Highway Runoff Manual

Chapter 6 of the *Highway Runoff Manual* provides guidance for preparing spill SPCC plans. It also includes guidance for selecting appropriate Spill Prevention, Containment, and Countermeasures (SPCC) BMPs. Operation and maintenance of these BMPs are also discussed.

Standard Specifications

Section 1-07.15(1) of the WSDOT's *Standard Specifications* includes the language used to enforce contractual obligations to prepare SPCC plans and carry out the plan. The specifications also require the contractor to submit the plan to the Engineer prior to the commencement of any on-site construction activities; maintain a copy of the plan on site; and in the event hazardous materials are encountered, do everything possible to control and contain the material until appropriate measures can be taken. WSDOT's Hazardous Materials Program developed a number of documents and guidance materials to assist contractors in developing a SPCC Plan to satisfy the requirements of Standard Specification 1-07.15(1).

3.2.2 Certification

Spill prevention training is a component of the Construction Site Erosion and Sedimentation Control course described in Section 3.1.2.

3.3 Construction Stormwater Pollution Prevention Program Evaluation

The following measure will help evaluate the effectiveness of the construction stormwater pollution prevention program:

- Report summary of each fall's *Erosion Control Plan Implementation and Effectiveness Assessment*
- *Construction water quality monitoring results summary*


Section 4: Stormwater Management for New Facilities


4.1 Stormwater Controls for New Facilities

The construction of new or modified Washington State highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities requires the planning and design of stormwater management facilities in order to minimize impacts to water resources. WSDOT manages stormwater discharges from these areas using the *Highway Runoff Manual* and the *Hydraulics Manual* to provide consistent design procedures statewide. These manuals reflect the best available science in stormwater management and represent the best practicable engineering approaches to stormwater management currently available for WSDOT facilities. These manuals will receive periodic updates to enhance content clarity as well as reflect changes in the regulatory landscape, advances in stormwater management, and improvements in design tools.


This section of the SWMP focuses on post-construction stormwater management controls. Maintenance-related stormwater controls are described in *Section 6 – Maintenance*.

Highway Runoff Manual

The *Highway Runoff Manual* (HRM), available on the Internet at:  <http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm>, directs the planning and design of WSDOT stormwater management facilities. This manual meets the level of stormwater management established by the Washington Department of Ecology's stormwater management manuals. Washington State stormwater management requirements were developed to protect receiving waters from adverse hydrologic change and water quality degradation that can occur with project development. The HRM establishes minimum requirements and provides uniform technical guidance for avoiding and mitigating water resource impacts associated with the development of state-owned and operated transportation infrastructure systems, and for reducing and minimizing water resource impacts associated with the redevelopment of those facilities. The HRM also provides guidance for integrating the planning and design of stormwater-related project elements into the context of the WSDOT project development process, hydrologic analyses required to design stormwater BMPs and temporary erosion and sediment control BMP design (Note: erosion control elements are described in *Section 3 – Construction Site Erosion and Sediment Control*).

Note to Reviewers: The HRM is undergoing refinement. Information on this update can be found at:  http://www.wsdot.wa.gov/environment/wqec/hrm_2005revision.htm

Hydraulics Manual

The *Hydraulics Manual*, available on the Internet at:  <http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm>, is used in conjunction with the *Highway Runoff Manual* for analysis and design of stormwater facilities. This manual describes the preparation of project Hydraulic Reports as well as provides detailed information on hydraulic and hydrologic analysis related to drainage

collection and conveyance systems, culverts, drainage outfalls, and a variety of other hydraulic features of highway design.

4.2 Local/Specific Area Requirements

WSDOT's *Highway Runoff Manual* provides a set of tools and options that support compliance with local, state, and federal regulations related to stormwater management. In most instances, local stormwater management requirements will not override the requirements in the *Highway Runoff Manual*. The Revised Code of Washington (RCW) 47.01.260(1) grants WSDOT plenary power in planning, locating, designing, constructing, improving, repairing, operating, and maintaining state highways, including drainage facilities and channel changes necessary for the protection of such highways. This grant of authority means that, absent express legislative direction, WSDOT is not subject to local ordinances in areas within WSDOT's purview.

With respect to all state highway right-of-way in the Puget Sound basin under WSDOT control, Washington Administrative Code (WAC) 173-270-030(1) requires WSDOT to use the *Highway Runoff Manual* to direct stormwater management for its existing and new facilities and rights-of-way [WAC 173-270-030(1)]. Stated exceptions where more stringent stormwater management requirements may apply are addressed in WAC 173-270-030(3)(b) which state that:

When a state highway is located in the jurisdiction of a local government that is required by ecology to use more stringent standards to protect the quality of receiving waters, WSDOT will comply with the same standards to promote uniform stormwater treatment.

The key emphasis here is that the local government has to be required by Ecology to use more stringent standards rather than simply opting on its own to do so. Examples include projects and/or discharges located within a geographic area governed by an Ecology-approved basin plan or TMDL-triggered water quality cleanup plan that establishes more stringent stormwater management targets.

Other instances where more stringent local stormwater standards can apply are projects subject to stormwater management-related permit conditions associated with critical area ordinances (under the Growth Management Act) and shoreline master programs (under the Shoreline Management Act). In addition, WSDOT needs to comply with local jurisdiction stormwater standards when WSDOT elects, and is granted permission, to discharge stormwater runoff into a municipality's stormwater system.

4.3 New Facilities Stormwater Management Program Evaluation

The following measures will help evaluate the stormwater management for new facilities:

- Assess the need to update, and revise as necessary, the *Highway Runoff Manual* and *Hydraulics Manual* on a biennial basis
- Establish a process by the end of the 5-year permit period for integrating the documentation of newly constructed stormwater amenities in the *Stormwater Facilities Inventory Database* as part of the project closeout procedure.

Section 5: Stormwater BMP Retrofit for Existing Facilities

WSDOT's ultimate goal is to provide practicable stormwater treatment for runoff from existing impervious surfaces that do not have treatment, or for which treatment is substandard. In making those retrofit decisions, WSDOT follows an approach that ensures it does not circumvent the Transportation Commission (Commission) or Legislative authority to determine where to invest financial resources.

5.1 Stormwater Facilities Retrofit Program

WSDOT's stormwater facilities retrofit program consists of the following two elements:

1. The amount the State Legislature appropriates for stand-alone stormwater retrofits.
2. Retrofit of existing pavement as part of transportation improvement projects per guidance in the *Highway Runoff Manual*.

Stand-alone Retrofits

The Commission has adopted a departmental budget structure with a specific category for retrofitting existing impervious surfaces in order to meet one of the requirements of Washington Administrative Code (WAC) 173-270-060. Construction of stand-alone BMP retrofits is accomplished through funding of WSDOT's I4 Environmental Retrofit Project stormwater category. I4 stormwater BMP retrofits requires specific allocations through the Washington State Legislature with selection of individual stand-alone retrofit projects identified through WSDOT's stormwater retrofit prioritization process, described in Section 5.2 below.

Improvement and Preservation Project-related Retrofits

Consistent with WSDOT's goal to retrofit existing impervious surfaces where a significant amount of pavement is added on a project, the Commission also allows the Department to include the work from one project category in another if it does not add significant cost to the project. In accordance with this guidance, which is reflected in the *Highway Runoff Manual*, WSDOT Strategic Planning and Programming established the following limitations for adding the stormwater treatment of existing impervious surfaces into new improvement and preservation projects:

1. Mobility Projects (I1 subprogram) can always consider including the cost of retrofitting existing impervious surfaces as part of I1.
2. Safety Projects (I2 subprogram) can include the retrofitting of existing impervious surfaces only if the cost to retrofit all existing impervious surfaces does not exceed an additional 20 percent to the cost of treating new

impervious surfaces. The region may request a variance from this limit if it believes there are extenuating circumstances.

3. Economic Initiatives (I3 subprogram *except for* Four-lane Trunk projects) can include the retrofitting of existing impervious surfaces only if the cost to retrofit all existing impervious surfaces does not exceed an additional 20 percent to the cost of treating new impervious surfaces. The region may request a variance from this limit if it believes there are extenuating circumstances.
4. Four-lane Trunk projects in the I3 subprogram can always consider including the retrofitting of existing impervious surfaces.
5. Environmental Retrofit Projects (I4 subprogram, *except for* the stormwater retrofit category) do not add new impervious surfaces and cannot retrofit existing impervious surfaces. The region may request a variance from this limit if it believes there are extenuating circumstances.
6. For those safety and economic initiative projects that exceed the 20 percent limit, and where the Project Control and Reporting Office and region concur, the region can submit a request for funding from the I4 Stormwater Retrofit category. These requests will be prioritized along with the other stormwater retrofit needs already identified for funding by the Legislature.
7. Paving projects (P1 subprogram) can only consider retrofitting existing impervious surfaces for projects involving the total replacement of existing concrete lanes (i.e., on projects that only replace the existing asphalt shoulder with concrete, retrofitting is not required).

Budget implications and Department of Ecology-approved basin plan status are considered prior to including retrofit as part of a project's scope. Associated costs for providing flow control for all of the runoff from new, replaced, and existing impervious areas are recorded in the project's Hydraulic Report.

In general, most preservation projects do not add any new impervious surface and therefore the guidelines above will generally have minimal impact for this category of projects. However, if a stormwater outfall/deficiency is located within the limits of a preservation project, the region may develop a companion project proposal for the I-4 Environmental Retrofit Projects' stormwater category if the deficiency is considered a priority, generally considered as being in the 6-year program. These retrofit projects will be prioritized along with the other stormwater retrofit needs already identified.

5.2 Stormwater Retrofit Prioritization Process

WSDOT's stormwater retrofit prioritization scheme, originally developed in 1993, is the qualitative process for assigning a retrofit priority index value to a specific outfall location. This prioritization scheme was substantially revised in 1999 in coordination

with an inter-agency committee convened to address a range of issues relating to the environmental retrofit program.

All the parameters used to determine the prioritization score must be available before the score is calculated. Table 5-1 describes the parameters used in the prioritization process. These data points are feed into an algorithm to determine the overall prioritization score.

Note to Reviewers: While this probably was not the intent, employing the algorithm generated by this prioritization scheme has resulted in ADT being the driving parameter in establishing retrofit priorities. This data intensive-driven scheme is extremely resource intensive to employ and does not seem to hone in on the areas of greatest need. WSDOT would welcome an approach that employs a much less data intensive (i.e., resource intensive) scheme to targets priorities, perhaps one based on priorities set out in basin/watershed action plans, TMDL-triggered water clean-up plans, salmonid recovery strategies, etc.

Table 5-1. Parameters Used to Determine Prioritization
Type and size of receiving water body
Beneficial uses of the receiving water body
Highway contribution to total runoff
Off-site pollutant loading source
Percent highway drainage contributing to watershed
Highway impervious area, tributary to outfall
Cost to pollution benefit
Right-of-way costs
BMP capital construction cost
Type of conveyance structure
Water quality of receiving water
Water quality multiplier
Future construction plans
External Conditions
Outfall within the boundaries of a Watershed Action Plan
Cost sharing opportunity with local jurisdictions
Watershed improvement financial support available
Public relations/educational opportunity
Permit obligation
Court mandated water quality standards for watershed
Best professional judgment

5.3 Stormwater Facilities Inventory and Information Management

WSDOT uses an inventory, scoring, prioritization, and programming system to aid in identifying its stormwater-related facility deficiencies and prioritizing retrofits to address those deficiencies. WSDOT began inventorying its stormwater management

infrastructure in the Puget Sound Basin in 1993. The inventory effort involves identifying stormwater management facilities by researching construction plans, as-builts, and supporting documents; interviewing WSDOT regional personnel; reviewing geographic overlays and aerial photographs; and performing field investigations.

WSDOT guidelines for targeting appropriate stormwater facilities for inventorying include:

- All pipes 12 inches or greater in diameter that convey stormwater from the highway to a location off WSDOT right-of-way (ROW), or into water bodies within WSDOT ROW. All culverts 8 inches in diameter that discharge directly into surface water.
- Channels, or ditches that convey water off WSDOT ROW or to water bodies within the ROW.
- Runoff treatment facilities and flow control structures.
- Interconnections of municipal storm drain systems with WSDOT's drainage, including ditches and pipes where local jurisdictions' drainage conveyances discharge onto or pass through without surfacing the highway ROW.
- Private property connections off the ROW. In some cases, the site will be an open channel conveying stormwater onto the ROW.

Gathering all the information necessary to complete the inventory requires both office research and in-field site reviews for each outfall location. The research portion of the inventory supports the field data collection effort by identifying the outfalls that are adversely impacting or have a potential to adversely impact water resources and associated beneficial uses. Data gathered includes information on the outfall location, watershed hydrology, and receiving water body water quality impairments and beneficial uses. The research portion also involves gathering data on the known external influences that may affect planning and scoping relative to the outfall location. For example, outside influences may include legislative activities, activities of other departments within state government, or the activities of local cities, communities, and tribal organizations.

The field data collection portion of the inventory involves gathering outfall-specific information necessary for determining the potential BMP replacement, retrofit, or repair approach. Data gathered in the field includes geographic and photographic information, adjacent land uses, receiving water body type, distance of outfall to receiving water body, and description of the outfall and conveyance system(s). The description of the outfall and conveyance system includes information on catchment size, percent contribution of highway runoff to watershed, conveyance system type, and other observations. Another portion of the in-field collection effort involves gathering data on aspects of the ROW (including ROW land classification) and existing BMPs and their condition.

Furthermore, during dry weather, field visits assess whether any illicit discharges are present in the WSDOT drainage system. Data collected for each inventoried outfall is entered into the *Stormwater Management Facilities Inventory Database* that is maintained by the ESO's Water Quality Program. This database manages and interprets the data related to a given outfall to identify deficiencies requiring retrofit, repair, or replacement. In the event improvements have been identified for a particular outfall, cost estimates for those improvements are generated. The database then calculates the weighted retrofit prioritization score for each outfall location.

Since establishing retrofit priorities is highly dependent on the data contained in the *Stormwater Management Facilities Inventory Database*, inventory activities will initially target WSDOT highways with average daily traffic (ADT) $\geq 50,000$ that lie within 1/2-mile of a water body:

- On the *Section 303(d) List* for pollutants typically associated with highway runoff. Added focus would occur where TMDL-triggered *Water Cleanup Plans* are actively being developed to address highway-generated pollutants.
- Identified under the Endangered Species Act as *endangered* or *threatened* salmonid habitat.

Inventory of UIC facilities

Efforts underway will expand data gathering to facilitate WSDOT's compliance with *Underground Injection Control (UIC) Program* (Chapter 173-218 WAC) registration and assessment requirements. UIC facilities will be entered into the *Facilities Inventory Database* and all UIC facilities will be registered with Ecology as required. WSDOT will ensure that UIC facilities meet the *non-endangerment standard* by implementing the practices and activities described in this SWMP.

5.4 Retrofit Program Evaluation

The following measures will help evaluate progress in implementing stormwater retrofits:

- Report the number of lane-miles of highway right-of-way inventoried for stormwater facilities each biennium
- Report the number of standalone stormwater retrofit priority projects completed each biennium
- Report the number of square feet of existing impervious surface retrofitted or reverted to pervious surface as part of a highway improvement or preservation projects each biennium

Section 6: Maintenance

6.1 Technical Guidance and Standards

A brief summary of the technical guidance, manuals and standards used by WSDOT's Maintenance program are summarized below. Additional details on how these manuals are used by specific maintenance programs are provided in Section 6.2 – 6.6.

Maintenance Manual

The *Maintenance Manual* provides maintenance personnel with guidance on how to conduct and perform a wide variety of maintenance activities. The manual focuses on equipment, materials, techniques, and other information needed to properly carry out basic maintenance activities such as patching a pothole or removing snow from a roadway. The *Maintenance Manual* was developed as a guide for maintenance activities, but does not establish absolute standards. Guidelines detailed in the *Maintenance Manual* supplement the judgments of the trained maintenance personnel to facilitate uniform operating procedures and performance guidelines. The primary activities described that are related to stormwater concerns are roadside maintenance, drainage facilities (e.g. ditches, dry wells, culverts and detention ponds), snow and ice control, and pavement repair.

Highway Runoff Manual

The *Highway Runoff Manual* was developed to direct the planning and design of stormwater management facilities for existing and new Washington State highways, rest areas, park-and-ride lots, ferry terminals, and highway maintenance facilities throughout the state. Section 5-5 of the *Highway Runoff Manual* describes BMP-specific maintenance standards that are used during inspections to determine when maintenance actions are required.

Regional Road Maintenance Endangered Species Act Program Guidelines

The *Regional Road Maintenance ESA Program Guidelines* were developed in response to the listing of Chinook salmon and bull trout as “threatened” under the Endangered Species Act (ESA). The *Regional Road Maintenance ESA Program Guidelines* provides a consistent, regional program that any agency can use to limit, reduce, or eliminate the prohibition on take of threatened species under the 4(d) Rule (NMFS), special 4(d) rule and/or Section 7 “take” exemption (USFWS). The National Oceanic and Atmospheric Administration’s Fisheries Service has approved WSDOT’s *Routine Road Maintenance Program and Plan* for compliance with ESA requirements.

WSDOT’s *Best Management Practices Field Guide for ESA 4(d) Habitat Protection* helps maintenance field staff document compliance with the *Regional Road Maintenance ESA Program Guidelines*. Additional information on Highway Maintenance’s compliance with ESA is available at: ☹

<http://www.wsdot.wa.gov/maintenance/roadside/esa.htm>

Integrated Vegetation Management for Roadsides

Vegetation management involves caring for and/or controlling foliage within the highway right-of-way. If managed properly, roadside vegetation can become naturally self-sustaining over time and require less intervention from maintenance crews as it grows and matures. WSDOT uses an Integrated Vegetation Management (IVM) program to achieve roadside vegetation stability via this environmentally responsible and economically sound approach. IVM is defined as a coordinated decision making process that uses the most appropriate long-term vegetation management strategy on a site-specific basis.

WSDOT's Manual *Integrated Vegetation Management for Roadsides* (July 1997) describes how maintenance crews apply IVM in their day-to-day highway maintenance work.

Snow and Ice Plan

The WSDOT *Snow and Ice Plan* was developed to obtain consistent, agreed-upon approaches to snow and ice control across the state. This plan describes the snow and ice roadway treatment goals and level of service. Due to the inherent differences in winter climate between eastern and western Washington, the plan establishes two different sets of road treatment levels for each half of the state. This WSDOT program is based on history and the expected average conditions of winter for eastern and western Washington. The plan also describes WSDOT's snow and ice training plan, operational guidelines, and chemical application guidelines.

6.2 Maintenance Practices for Operating Highways

6.2.1 Road Operation and Maintenance BMPs

Street Sweeping

Sweeping operations are conducted to keep road surface clean and remove sediment, leaves, paper, and other debris before it enters the storm drain systems or surface waters. Debris accumulation may require sweeping to occur as frequently as twice a month. The extent of debris accumulation and the level of service prescribe by the State Legislature dictates scheduling. The State Legislature currently funds sweeping operations at a B level (i.e., on average 6.7% -8.3% of the paved shoulder has visible sand and debris).

WSDOT Maintenance documents sweeping operations in ESA sensitive areas.

Collected street sweepings will be disposed of in a two-step process: 1) interim, and 2) final disposal. For interim disposal sweepings are stored at WSDOT Region "pit site" properties. Placement of sweepings does not occur within 100 feet of property boundaries, surface or drinking water sources, or in areas of designated geologic sensitivity. Final disposal involves the screening of sweepings at the street waste management facility. Highest priority is given to recycling, reuse, and permanent solutions rather than landfill disposal. WSDOT is permitted to reuse screened street

sweepings in several counties and continues to work with other local health departments towards this same goal.

Snow and Ice Control

WSDOT's *Snow and Ice Plan* provides guidance and specific goals for WSDOT Maintenance's snow and ice control program. The WSDOT program is based on history and the expected average conditions of winter for eastern and western Washington. Due to the dynamic nature of winter weather and resultant road condition variations, WSDOT maintenance personnel use a variety of treatments to control snow and ice at different times in different places. Due to the inherent differences in winter climate between eastern and western Washington, two different sets of road treatment levels are established for each half of the state. The plan describes treatment levels and provides maps that show treatment goals for all state highways.

The WSDOT anti-icing chemical application guideline provided in WSDOT's *Snow and Ice Plan* guides WSDOT highway anti-icing operations for maintenance field personnel. These guidelines describe maintenance actions for preventing the formation or development of packed and bonded snow or bonded ice during a variety of winter weather events. The guidance complements the decision-making and management practices of a systematic anti-icing program. This guidance is based upon the Federal Highway Administration's *Manual of Practice for an Effective Anti-Icing Program* and the National Cooperative Highway Research Program 6-13. Both manuals provide application rates for Sodium Chloride (NaCl). This Guide has been prepared to show equivalent application rates for Calcium Chloride (CaCl₂), Magnesium Chloride (MgCl₂), and Calcium Magnesium Acetate (CMA).

The Winter Operations Database provides an automated process to collect field data for WSDOT's Winter Operations. This database will track the location, weather conditions and the amount of product being use.

Catch Basin and Inlet Maintenance

Catch basin and inlet maintenance is dictated by debris accumulation and level of service prescribed by the State Legislature. The *Maintenance Manual* dictates inspection of the highway drainage systems at least twice per year. This process includes inspection of catch basins and inlets. Known problem areas are inspected and cleaned more often. The State Legislature currently funds catch basin and inlet cleaning operations at a C+ level (i.e., an of average 7.1% - 9.7% of the inlets blocked or catch basin silt buildup greater than 50% of the catch basin depth as measured from the bottom of basin to invert of the pipe).

Ditch, Channel, and Culvert Maintenance

Open ditches are routinely checked and maintained to the line, grade, depth, and cross section to which they were constructed. The State Legislature currently funds ditch maintenance at a C level (i.e., an average of 6.7% - 8.3% of the ditches contained sediment greater then 50% full). The State Legislature currently funds culvert maintenance at a D+ level (i.e., an average of 10.1% - 13.4% of pipes/culverts greater

than 50% full). Vegetation removal occurs when flow is blocked or excess sediments have accumulated. Work is performed in accordance with the *BMP Field Guide for ESA 4(d) Habitat Protection*. Culvert inspection occurs at least twice a year to ensure they are clean and in good operating condition.

6.2.2 Maintenance of stormwater treatment and flow control BMPs

Treatment and flow control BMP maintenance is dictated by trash/debris/oil/sediment accumulation and level of service prescribed by the State legislature. The *Maintenance Manual* dictates inspection of the highway drainage system at least twice per year, with deficiencies corrected as discovered. Additional inspections may be conducted during heavy storms and periods of high runoff. This process includes inspection of stormwater treatment and flow control BMPs. Known problem areas are inspected and maintained more often. Work in sensitive areas is performed in accordance with the *BMP Field Guide for ESA 4(d) Habitat Protection*.

The State Legislature currently funds the maintenance of detention/retention ponds at a C level (i.e., an average of 6.7% - 8.3% of the basins with greater than 25% filled with sediment).

6.2.3 Regional Road Maintenance ESA Program

The *Regional Road Maintenance ESA Program* is WSDOT's mechanism to employ a road maintenance program that appropriately protects aquatic habitat conditions. WSDOT maintenance crews and regional maintenance environmental coordinators who work within sensitive priority areas and ditches utilize this program. In addition to aiding in the conservation of listed salmonids, the program helps protect water quality and quantity, aquatic and shoreline habitats, and the traveling public safety.

Program elements combining policy, management, and field practices comprise the fifteen maintenance categories listed below and include stormwater control structures and facilities maintenance activities.

1. Roadway Surface.
2. Enclosed Drainage Systems.
3. Cleaning Enclosed Drainage Systems.
4. Open Drainage Systems.
5. Watercourses and Streams.
6. Stream Crossings.
7. Gravel Shoulders.
8. Street Surface Cleaning.
9. Bridge Maintenance.
10. Snow and Ice Control.
11. Emergency Slide/Washout Repair.
12. Concrete.
13. Sewer Systems.
14. Water Systems.
15. Vegetation.

Highway Maintenance uses the *BMP Field Guide for ESA 4(d) Habitat Protection* to guide staff on appropriate BMPs for the fifteen maintenance categories. Maintenance staff identifies ESA-sensitive areas using *Roadside Sensitive Management Area Atlases* and roadside sensitive area markers. Staff uses a Personal Data Assistant (PDA) to document WSDOT compliance with ESA 4(d) “take” limits. Information from the PDA is entered into the ESA Compliance Database. Further information on maintenance guidelines for ESA compliance can be found at: <http://www.wsdot.wa.gov/maintenance/roadside/esa.htm>.

6.2.4. Facility Stormwater Pollution Prevention Plans

While WSDOT has developed Stormwater Pollution Prevention Plans (SWPPPs) for several maintenance facilities, an *Environmental Management System (EMS) Policy Procedures Manual* currently under development will serve as a generic SWPPP for rest areas and park & ride lots as well as maintenance facilities that store equipment, fuel vehicles, and conduct heavy equipment and vehicle repair.

6.2.5. Litter Control

WSDOT maintenance staff removes a significant amount of litter along state highways. Litter control for state highways primarily consists of the following activities:

- Pick up and disposal of litter bags;
- Pick up and disposal of large debris, such as furniture, tires, and dead animals;
- Department of Corrections work release program; and
- Adopt-A-Highway program.

In addition to the programs mentioned above, the Department of Ecology’s Solid Waste Program sponsors the Ecology Youth Corps, which employ Youth Corps members in picking up litter from state highways. Washington State Patrol is responsible for enforcement of litter-control laws on state highways.

Additional information on the Adopt-A-Highway program can be found in section 8.1.1 of this SWMP.

6.2.6. Vegetation Management

Roadside Vegetation Management Program

WSDOT is developing a system for the creation of locally based roadside vegetation management plans. These plans include an inventory of routine maintenance activities, weed infestations, and sensitive areas together with prescriptions for the most effective methods for consistent and low-cost roadside vegetation management. They also include the use of a record keeping system to document site-specific methods for control of weeds, together with a follow-up evaluation of treatments and ongoing control measures in succeeding years. Roadside Vegetation Management Plans will be developed for all Washington State highways by 2007.

WSDOT maintains a networked database that includes individual records for each herbicide application conducted by WSDOT. This recordkeeping complies with related Washington State Department of Agriculture recordkeeping requirements. WSDOT is expanding this recordkeeping system to include additional information (i.e., outcome of treatment) to support the ongoing evaluation of vegetation treatments per the Roadside Vegetation Management program.

Locations have been identified, mapped, and marked in the field where the highway right-of-way lies within 300 feet of waters where aquatic species listed as *threatened*- or *endangered* under ESA inhabit. Where applicable, 60-foot buffers are being marked for compliance with the recent court ruling restricting certain herbicide uses.

Information on the Roadside Vegetation Management program can be viewed at: 
<http://www.wsdot.wa.gov/maintenance/vegetation/default.htm>

Pesticide Applicators Certification

WSDOT employees engaged in pesticide application obtain a pesticide applicators license from the Washington State Department of Agriculture (DOA) prior to handling pesticides or giving recommendation on the use of pesticides. DOA's licensing program requires employees to attend 16 hours of training and completion of an examination in a DOA approved training course. Recertification is accomplished through 40 hours of accredited training courses completed in a five-year period.

Pesticide Application Database

State law requires that records be kept for a seven-year period following all pesticide applications. WSDOT has developed a system of pesticide accountability for all pesticides stored, issued and used by WSDOT. There are two different computer-based form and record keeping systems. The *Stores Issue Form* records the WSDOT region material inventory, amount of material ordered, and designates to whom the material was issued. The *Pesticide Application Record* provides a detail documentation of information including: state road, county, date, location of application, “pest” to be controlled, method of control, weather condition (start and finish), material name, type, EPA registration number, lot number, product applied per acre, total daily usage, application information (including equipment number, calibration date, vehicle speed, nozzle pressure, width of spray pattern, and method of application), operator name and license number, and pesticide sensitivity registration area.

6.3. Maintenance Practices for Operating Washington State Ferry Terminals

Spill Prevention and Containment

Washington State Ferry terminals store very limited quantities of liquids on site. Most of these materials are stored in “hazardous materials lockers” or “flammable liquid storage cabinets.” The potential for spills from facility operations is small. However, in the event of a spill, the terminals are equipped with spill kits and the staff is trained in spill clean up procedures. WSF maintenance crews also have spill clean up supplies in the

event a spill occurs during maintenance activities. WSF staff are trained to call 911 for help in the event of a large spill at a terminal. WSF also has an Oil Spill Response contract for vessel fueling.

Stormwater Collection System Maintenance

Stormwater management control structures include 6 to 10 oil-water separators, a GullyWasher[®] with absorbing pads, and a control structure maintained by the City of Bremerton as part of a contractual agreement between the City of Bremerton, Port of Bremerton, WSF, and Kitsap Transit.

Stormwater Treatment and Flow Control BMP Maintenance

WSF uses a maintenance management program, Maintenance Productivity Enhancement Tool (MPET) for all maintenance. There are three types of Work Requisitions (WR): corrective, preventative maintenance, and standard jobs. Terminal Maintenance primarily uses the corrective and preventative maintenance WRs. The preventative maintenance WRs are automatically generated by the program at a set schedule.

Ferry Terminals have two types of maintenance objects regarding stormwater systems: storm drains and oil-water separators. There are preventative maintenance schedules set up to inspect the storm drain system, clean oil-water separators, and clean some catch basins with inserts.

Preventative maintenance WRs are generated 30 days prior to the scheduled start date. The WR is assigned to a person to perform the work. Upon completion of the preventative maintenance, the data is inputted into the program and the WR is posted to document the history. MPET generates a report that documents the history for each maintenance object or type of maintenance object. Inspections generate corrective WRs for corrective work that requires maintenance.

Deicing

No chemical deicing products are used or stored at the terminals. Sand and salt material applications are used rather than chemical products.

Sweeping

Ferry Terminal supervisors are responsible for ensuring that contractual sweeping services are conducted on a monthly basis. Traffic attendants do not usually sweep the lots, but they do sweep the passenger walk-on areas on a daily basis or as needed.

Vegetation and Landscape Maintenance

WSF maintains landscaping where needed, but not all terminals have landscaping. Landscaped areas, if present, are mowed, trimmed, and weeded by hand. Contractors perform all landscape maintenance. Minimal spot-spraying of weeds is performed at a few terminals and noxious weed removal occurs as directed by the counties. Pesticide spray application activities are only conducted at the Anacortes terminal through contracted services. The Southworth and Tahlequah terminals are the only terminals with biofiltration swales.

Industrial Activity and Operations

WSF has one maintenance and repair facility, the Eagle Harbor Maintenance and Repair Facility, which is covered by Ecology's Industrial Stormwater General Permit as described in Section 1.5.4.

6.4. Spill Prevention and Containment

Maintenance crews sometimes encounter emergencies associated with transportation accidents and less frequently with natural disasters (e.g., landslides, floods, fires, washouts). Traffic accidents on highways occasionally result in the release of hazardous materials. If those responsible for the hazardous materials release cannot be identified or made to contain and clean up the release, the Department of Ecology (Ecology) assumes these responsibilities.

WSDOT staff are instructed to take only the emergency actions required to protect human life and property until the Washington State Patrol (WSP) has gained control of the situation. The WSP has the responsibility for safety measures and coordination of the clean up of spilled substances. The role of WSDOT maintenance personnel is to manage traffic at incidents on state highways. This is conducted in support of the overall incident management effort. WSDOT personnel can also provide technical information (i.e., information on drainage system characteristics) in support of the incident response. However, maintenance personnel who are trained to do so will take control actions when necessary and feasible to prevent a release of small quantities of petroleum products into surface waters.

Efforts are underway to develop a memorandum of understanding between Ecology, State Patrol, and WSDOT regarding responsibilities for hazardous material spill response.

Spills and Hazardous Materials Data

A number of emergency spill tracking systems are available to WSDOT to assist with identifying high-risk spill sites along state routes. Both the Washington State Patrol (WSP) and Department of Community Development (DCD) receive complaints or reports regarding spills that have occurred statewide. The DCD forwards spill records to Ecology, which maintains a database for tracking spills. Ecology forwards information related to highway accidents to WSDOT's Transit Research and Intermodal Planning Section (TRIPS) for their comprehensive database on accidents. This information is factored when prioritizing outfalls for retrofit. In addition, safety improvements can be made at sites where frequent accidents occur.

Efforts to track hazardous material spills are conducted in conjunction with the Washington State Patrol and/or the local law enforcement agency responding to the accident scene. The accident form records whether a hazardous material was involved, and if so, if a release occurred. It does not document the material involved, the quantity released, or the clean-up status. The reporting format is currently scheduled for revision in 2005.

6.5. Capital Improvement Assistance to Local Governments

Beginning in 1993, WSDOT Maintenance has been distributing funds to local government for the construction of street waste management facilities. These facilities serve as eductor truck dewatering facilities as well as for the stockpiling and screening of sweepings. Local governments provide the site, design and operation of the facilities, while WSDOT provides the funding. It is good public policy to manage the wastes responsibly, and construct facilities for multi-users.

6.6. Maintenance Program Evaluation


Maintenance Accountability Program

The Maintenance Accountability Process (MAP) is a tool that measures and communicates the outcomes of the maintenance activities. It provides the tools to link strategic planning, the budget, and maintenance service delivery. Twice a year, field inspections are made of randomly selected sections of highway. The results are measured, recorded and compared to the MAP criteria to determine the level of service (LOS) delivered.

There are a number of activities related to stormwater tracked by the MAP that relate to the stormwater management program:

- Sweeping and Cleaning
- Maintain Ditches
- Maintain Culverts
- Maintain Catch Basins and Inlets
- Maintain Detention/Retention Basins
- Slope repair
- Litter Pickup
- Vegetation Control
- Snow and Ice Control

By January 2007, WSDOT will have inventoried and inspected major highway stormwater management facilities. This effort will enhance the Department's ability to set appropriate maintenance service levels for these facilities. Information generated from MAP will also be used to justify maintenance-related funding requests during the 2007 Legislative session. If approved, those funds would be used to correct any deficiencies found in the initial inspection. The funds would also be utilized to finance future routine inspections and maintenance as well as staff training associated with those activities.

Information on the *Maintenance Accountability Process* can be found at: 
<http://www.wsdot.wa.gov/maintenance/mgmt/accountability.htm>

Highway Maintenance Management System (under development)

WSDOT's Highway Maintenance Management System will be comprised of many stand-alone databases that will be linked together. Currently, the following databases are being used.

- Striping Activities – highway paint striping activities
- ESA Compliance
- Winter Operations
- Northwest Region Highway Feature Inventory
- West Nile Virus

Winter Operations Database

The *Winter Operations Database* provides an automated process to collect field data, for WSDOT's winter operations. This database tracks the location, weather conditions, and the amount of product being use.

ESA Compliance Database

The *ESA Compliance Database* tracks maintenance activities within priority sensitive areas, which are the areas within the right-of-way and within 300 lineal feet of a water body or wetland. The database provides a detailed record of activities in these sensitive areas including: state road, location of work, date, type of work, whether there was impact to the environment, permits obtained, and BMP used.

Building Operations Database

The *Computerized Maintenance Management System* (CMMS) module is used for the tracking and planning of all facility maintenance. Regional Facility Managers and crew maintain data through a web-based interface for tracking corrective and preventative maintenance work on facilities and support equipment. This, in turn, is used for cost analysis for equipment replacement and other maintenance functions. All regions are developing preventive maintenance schedules that will identify what work will be performed and how often it will be done for all the equipment in the inventory.

The following databases will be available in the next few years.

- K-Job – 3rd party repair cost estimate work orders
- Time Collection – Time cards
- Spraying Activities – Pesticide application (The current Pesticide Application Database cannot be linked under the proposed Highway Maintenance Management System)
- Signal and Intelligent Transportation Systems (ITS) Maintenance
- Maintenance Productivity Enhancement Tool – Urban tunnels and moveable floating bridges.
- Stormwater Facility BMP – Identifies the facility's location as well as tracking its inspections and associated maintenance activities. This database will be linked to the *Stormwater Management Facilities Inventory Database*.

The following measures will help evaluate progress in implementing stormwater-related maintenance program activities:

- Develop *Roadside Vegetation Management Plans* for all Washington State highways by January 2008
- Inventory and inspect major highway stormwater management facilities by January 2007
- Integrate Maintenance Office review as part of the stormwater facilities design approval process by the end of the 5-year permit term.


Section 7: Research/Monitoring

7.1 Stormwater Research Strategy

Stormwater management is a complex task with a variety of regulatory drivers and constraints. It spans numerous technical disciplines including hydraulics, hydrology, geology, and water quality. For transportation projects, the linear nature of the highway network often poses siting constraints for conventional stormwater management approaches, in addition to considerations required for providing safe access for maintenance of stormwater treatment facilities. To help meet these challenges, the WSDOT relies on research efforts to help identify state-of-the-art, cost-effective solutions for designing, constructing, and maintaining stormwater management systems.

The Stormwater Research Strategy is a tool for communicating WSDOT's stormwater-related research needs and priorities. The Strategy provides the framework to:

- Coordinate and build partnerships within WSDOT and at regional, state, and federal levels to leverage stormwater research resources
- Provide a clear process for soliciting, submitting, prioritizing, and implementing stormwater-related research proposals
- Find solutions that improve the design, constructability, maintainability, cost effectiveness, hydraulic performance, and treatment efficiency of stormwater facilities, as well as stormwater management operations and maintenance practices
- Improve the compilation, tracking, and dissemination of stormwater research findings

The remaining sections describe how WSDOT promotes and implements stormwater research and interacts with other research programs; lists priority stormwater-related research needs; describes how stormwater proposals are developed, evaluated, and prioritized; and how research findings are disseminated. The current list of stormwater research proposals can be viewed at: 

http://www.wsdot.wa.gov/environment/stormwater/sw_proposals.htm.

7.2 Communication and Coordination

Effective internal and external communication and coordination is essential to supporting, promoting, and executing stormwater research. This section outlines the plans and processes for coordinating internal and external stormwater research-related efforts as well as for sharing and promoting research-related information.

WSDOT Research Office

WSDOT's Research Office organizes, manages, and disseminates the results of research (stormwater-related and other) conducted within the Department. The Research Office coordinates the identification, selection, and management of research projects funded through the Federal State Planning and Research Program, and helps develop and manage

research funded by other agency programs or by legislative direction. This includes identifying, investigating, and providing coordination of environmental-related research efforts. A successful stormwater-specific research strategy requires ongoing communication and coordination with WSDOT's Research Office.

Stormwater Technical Review Committee

The Stormwater Technical Review Committee (STRC) reviews stormwater research proposals. The STRC is an ad hoc WSDOT technical team convened and chaired by Environmental Services Office (ESO) Water Quality Program staff. In addition to the chair, the STRC consists of a core group made of representatives with best management practice (BMP) design and evaluation expertise (e.g., a regional hydraulics design engineer, a modeler from the Hydraulics Office, and ESO's Water Quality Team Leader). Additional disciplines will be called upon as needed.

The STRC reviews research proposals for applicability, potential overlap with other research proposals, and potential for partnering on a given proposal. The STRC also prioritizes the research proposals, setting the direction and focus for stormwater research. Proposals for research on new stormwater BMPs that are not included in the Highway Runoff Manual are handled in the same process as other stormwater research.

The STRC selects stormwater research projects to submit to the WSDOT Research Office and other entities for possible funding. Thus the STRC functions as one of the Research Advisory Committees as defined in the WSDOT Research Procedures Manual (page 2-2). The ranking by the STRC sets a direction and focus that advances WSDOT's stormwater research goals. However, funding sources ultimately control which STRC-recommended proposals get funded.

New Products Committee

WSDOT's New Products Committee (NPC) evaluates new products and procedures for potential use on construction and maintenance projects. Evaluators use a wide variety of information to better understand new products or procedures, including regulatory and testing institutions such as American Association of State Highway and Transportation Officials (AASHTO), the Highway Innovative Technology Evaluation Center (HITEC), and others. Many products also require field-testing to fully evaluate their performance and benefits. After an evaluation, WSDOT's NPC findings and recommendation for action typically falls into one of the following categories:


- Approved
- Not Approved
- Product Meets Current Specifications
- Non-Interest Or Limited Use Item

Because the evaluation of new products and procedures may drive, influence, or complement stormwater research, it is important for ESO's Water Quality Program to communicate and coordinate with the New Products Committee. In order to ensure this, cross-committee attendance between the NPC and the STRC is encouraged.

Local, State, and National Programs Coordination

To facilitate research partnerships and information sharing, ESO's Water Quality Program will coordinate with local, state, and national programs to promote or conduct stormwater research. Maintaining communication and coordination with these and other stormwater programs ensures that WSDOT stays abreast of the latest stormwater developments and priorities, and that state and local agencies can leverage resources through shared stormwater research efforts and information sharing.

Research Program Resource Web Site

WSDOT's stormwater research web site ()

<http://www.wsdot.wa.gov/environment/stormwater/default.htm>) publicizes the Stormwater Research Strategy, summarizes and communicates WSDOT's stormwater-related research activities and findings, and provides guidance on proposal development and review. The intended audience includes WSDOT staff interested in proposing research or reviewing current research priorities, affiliated research partners (e.g., universities, municipalities, state and federal agencies, etc.), and any citizens or public interest groups interested in stormwater research. The Stormwater Research Program web site includes the following elements:

- Overview of the stormwater research program including strategies and objectives
- List of current and past research efforts
- Reports and findings on stormwater-related research
- List of current research priorities
- Assistance with proposal development and submittal
- Links to research resources
- Contacts within the program

7.3 Information Management

An important goal of the Stormwater Research Program is to ensure that the information developed through research is easily available to interested parties. In addition to the website, information will be disseminated through existing libraries and databases.

WSDOT Library

The WSDOT Research Office includes the WSDOT Library, which manages a collection of books, manuals, technical reports, legal reference materials, standards, journals, and online resources on virtually every transportation-related subject. The WSDOT Research Office collaborates with the Library to catalog WSDOT research reports and to make national and state research documents available to WSDOT employees, university researchers, consultants, other government entities, and the public. Stormwater-related research results and findings will be included in the WSDOT Library in coordination with the Research Office.

Research and Monitoring Data

Monitoring data that are produced from a given research effort will be linked with the *Stormwater Management Facilities Inventory Database* to the greatest extent feasible. This will enhance the ability to evaluate water quality and quantity monitoring data in relation to other cataloged data such as average daily traffic (ADT) and drainage area.

7.4 Research Areas and Needs

Stormwater management operates in a dynamic arena of rapidly evolving public policy and advancements in management and design methods. Although these changes and advancements tend to shift stormwater research priorities every few years, WSDOT's core research areas will likely remain the same. Currently, WSDOT's stormwater-related research needs fall into the four categories outlined below.

Characterization of the properties of highway runoff

The extensive data collected by other states and local governments, along with WSDOT's own data gathering efforts during the past NPDES permit cycle, has significantly reduced the need for additional data to characterize highway runoff. While the general characterization of highway runoff is no longer a priority, collection of highway runoff data will continue, largely as a by-product of other monitoring efforts. For example, BMP effectiveness research requires evaluating untreated highway runoff (i.e., control samples) to allow before and after treatment comparisons. Characterization data is also an integral component of policy related research efforts (i.e., defining or refining treatment thresholds, or developing waste load allocations).

Characterization of the environmental effects of highway runoff

Although the character of highway runoff is generally known, the effects of highway runoff on the water quality, ecology, hydrology, and geomorphology of downstream systems is still a priority research area. Research on the effects of highway runoff will help further refine policy and management of highway runoff.

Methods to avoid, minimize, buffer, or mitigate highway runoff effects

WSDOT currently sees long-term benefits in pursuing and evaluating stormwater dispersion methods, infiltration systems, watershed-based mitigation approaches, and other cost-effective treatment options applicable for constrained highway right-of-way settings. However, WSDOT also recognizes the need to ensure that surface water quality protection efforts achieved through dispersion and infiltration do not come at the expense of soil or groundwater contamination.


Procedures and design tool development

Regulations or regulatory guidance may spawn the need for research to either verify appropriateness of regulatory triggers or assess its implications for department project and service delivery. The emergence of new stormwater approaches and technologies developed to comply with regulations often spurs the need for research to flush out

design and maintenance questions associated with those new management options. Findings from such research are incorporated into WSDOT's business practices through its updates to department technical procedures, guidance manuals (e.g., Highway Runoff, Hydraulics, Design, Environmental Procedures, and Maintenance Manuals), design tools (e.g., hydrologic models), and standard specifications (e.g., erosion and water pollution control).

7.5 Research Proposal Development and Evaluation Process

This section outlines the development and review process for stormwater research proposals. *Figure 7-1* depicts the process that a research idea goes through from conception to a fully developed and prioritized proposal. This is a collaborative effort between the proponent generating the idea and WSDOT's technical support staff, who will assist in shepherding the concept through the process. The amount of technical staff support needed in this iterative process will depend on the level and area of expertise of the individual(s) submitting the idea.

Instructions for preparing proposals and the submittal form are available as one downloadable file at: 

<http://www.wsdot.wa.gov/environment/stormwater/docs/StandardProposInstruction.doc>.

Proponents may wish to consult with ESO's Water Quality Program staff for advice and assistance while preparing their proposal. To avoid expending energy in pursuing research ideas that have been adequately investigated, a literature search should be conducted very early in the process.

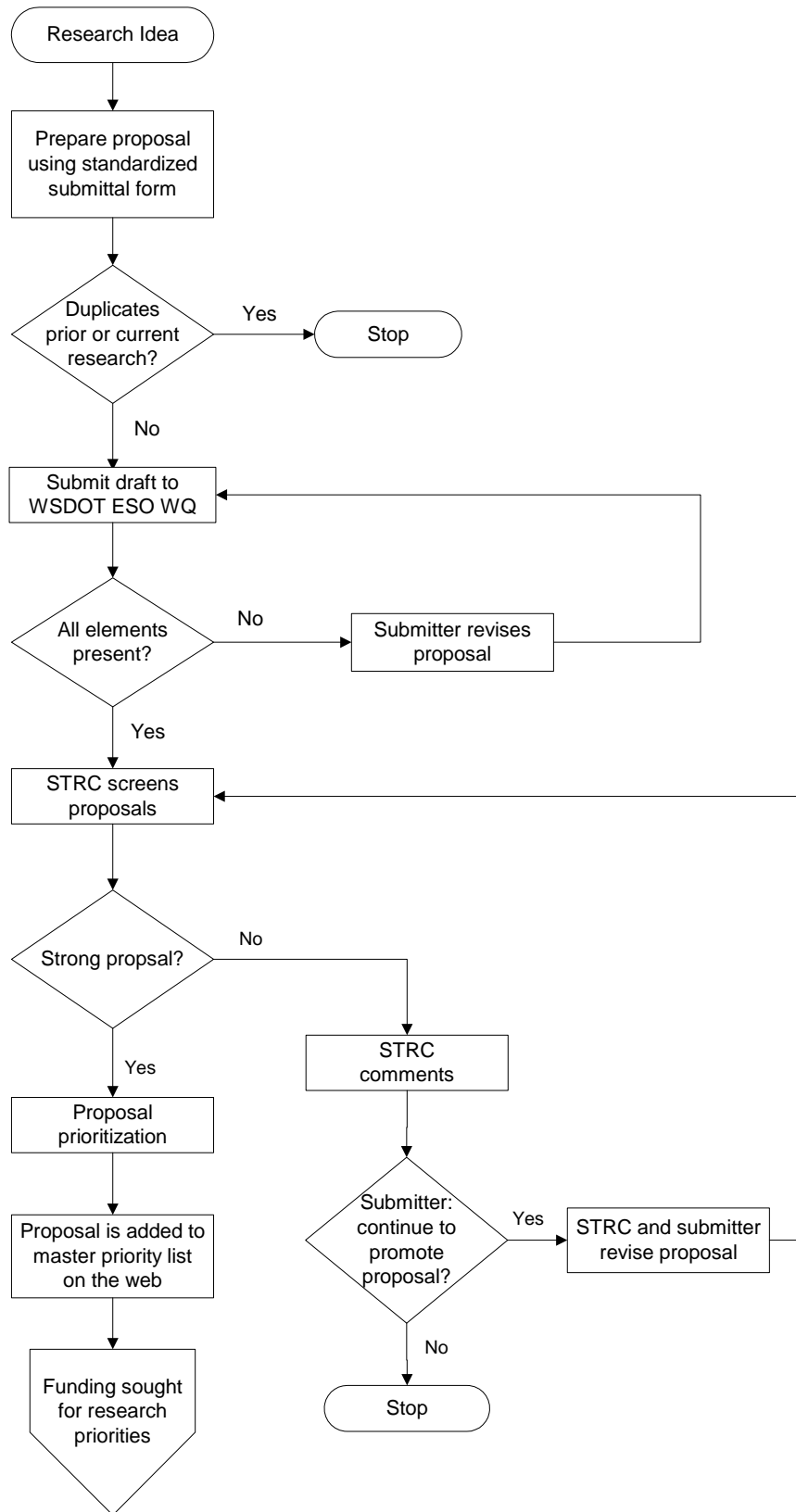


Figure 7-1 Research idea development process

Upon submittal, ESO's Water Quality Program staff checks the proposal to ensure it contains all the required information prior to sending it to the Stormwater Technical Research Committee (STRC). The STRC's initial screening evaluates whether:

- The proposal addresses key concern(s) for WSDOT operations.
- WSDOT or other researchers have already adequately investigated the topic.
- It overlaps with other existing research proposals or can be combined with other proposals.
- Potential funding partners exist.

The purpose of the preliminary screening is not to rank the research proposals, but to:

- Screen out proposals too far removed from WSDOT's interests and responsibilities, or that have already been covered in existing proposals or by previous research efforts
- Strengthen the proposal by suggesting refinements, re-directions, or additions to the proposed study
- Strengthen the proposal by integrating it with similar proposals or partnering with others interested in the same topic.

Screened proposals may be returned, with comments, to submitter; integrated with other proposals; or kept as-is. In the event that the STRC fails to embrace the proposal, a submitter may elect to either abandon the proposal or work collaboratively to refine the proposal in order to adequately respond to the STRC's feedback.

The STRC prioritizes promising proposals based on the following criteria:

- *Applicability and Practicality.* Research having practical application statewide or regionally will rank higher than those with limited applicability, or less practical applications.
- *Time-Sensitivity.* Research filling an immediate critical need will rank higher than proposals for more general or "pure" research.
- *Cost Considerations and Potential for Partnerships.* A qualitative cost-benefit evaluation will be performed for each proposal to determine whether the investment in the research effort will provide a valuable benefit to WSDOT. Proposal reviewers will also consider the availability of funds and funding partners.
- *Study Design Feasibility and Quality.* Proposal reviewers will evaluate whether the research method could be successfully deployed to yield useful results.
- *Degree of Knowledge Gap.* Research proposals may address topics that have been investigated to some degree by others. A high rank for this criterion will be applied to proposals where insufficient information exists or prior investigation has yielded inadequate knowledge.

Selected prioritized proposals will be placed on a master list of key research proposals, which will be maintained by the STRC. The list will be posted on the WSDOT's ESO

Water Quality Program web site at: 

<http://www.wsdot.wa.gov/environment/stormwater/default.htm>.

Proposals are selected, funded, and implemented, based on WSDOT priorities and available funding opportunities. Because funding criteria and restrictions vary from source to source, proposals may not necessarily be implemented solely based on the priority ranking. Thus while the strategy sets the research priorities, it can only influence the funding and implementation of individual research efforts.

7.6 Research Program Evaluation

The following measures will be used to help evaluate the stormwater research and monitoring programs:

- Report biannually the results of WSDOT stormwater-related monitoring.
- Develop a stormwater research strategy (including publishing and maintaining a prioritized list of research proposals) and actively pursue funding to finance research priorities. **Note to reviewers:** This effort will include continued WSDOT participation with the *Transportation Research Board* and *National Cooperative Highway Research Program*, as well as coordination of research efforts with other permittees and state Department of Transportation agencies in order to leverage resources and pool research funds.
- Promote and utilize the *WSDOT Graduate Fellowship Program* as a way to accomplish key stormwater-related research

Section 8: Education/Training/Public Involvement Programs

8.1 Education

WSDOT utilizes a variety of programs to help educate the public, consultants, contractors, and WSDOT personnel on stormwater issues. Several of the major education efforts include the Adopt-A-Highway Program, WSDOT's environment Internet site, and *Highway Runoff Manual*-related training curriculum.


8.1.1 Adopt-A-Highway Program and Litter Prevention Campaign

Litter and debris deposited on WSDOT right-of-way can become a stormwater pollutant during wet weather events and clog drainage and treatment facilities. WSDOT's Adopt-A-Highway Program is an anti-litter and roadside enhancement campaign that allows individuals and organized groups of citizens and/or businesses to work in partnership with the Department by "adopting" a section of state highway and agreeing to help take care of it. Participating groups or sponsors agree to take care of an "adopted" section of highway for at least two years. In return, the Department of Transportation erects a sign(s) at the beginning of the section identifying the adopting group. For volunteer groups, the Department also provides the necessary traffic control equipment, safety equipment, safety training, litterbags, and disposal of filled bags. WSDOT's Adopt-A-Highway Program is done in partnership with Ecology's litter prevention campaign, which was launched as a result of Washington State's 1998 Litter Act. As a participant in this program, WSDOT has also installed highway road signs featuring the campaign slogan, "Litter and it will hurt," and the toll-free number to report littering.

In addition to administering the Adopt-a-Highway Program, WSDOT is responsible for picking up litter along state roads. WSDOT personnel pick up litter themselves and the bags of litter collected by any group working on state roadways, primarily the Ecology Youth Corps, Department of Corrections, Adopt-a-Highway groups, and some Community Litter Cleanup Program crews.

Additional information on the Adopt-A-Highway program can be found on WSDOT's Internet site at:  <http://www.wsdot.wa.gov/biz/adoptahwy/>

8.1.2 WSDOT's Internet Site

The Environmental Services Office Internet site, among other things, disseminates information to the public regarding WSDOT's stormwater and water quality program ( <http://www.wsdot.wa.gov/environment/wqec/>). Information available on the site includes a listing of NPDES permits WSDOT operates under as well as downloadable versions of its NPDES annual progress reports. Links to WSDOT's stormwater-related guidance manuals, procedures, design tools, and related resources are also available. Efforts are underway to post WSDOT's stormwater research strategy as well as reports on WSDOT's stormwater-related research activities. In addition, the Internet site

provides a channel for contacting WSDOT staff regarding water quality/stormwater inquiries.

WSDOT's Maintenance and Operations Internet site (<http://www.wsdot.wa.gov/maintenance/>) disseminates information regarding stormwater management topics such as: Integrated Vegetation Management Program, Regional Road Maintenance Endangered Species Act Program, and steps WSDOT takes to control litter and the spread of West Nile virus.

8.1.3 Customer Service

WSDOT's Customer Service Office responds to inquiries from the public through e-mail, as well as by telephone, and by referring questions to the many experts within WSDOT. Inquiries received are logged and tracked using an internal database, and responses are monitored for clarity and content.

WSDOT's Ombudsman is responsible for investigating whether the Department's decision-making may have been unreasonable, unfair, arbitrary or improper, and if it has, helping to correct matters. The Ombudsman conducts inquiries and investigations in an impartial manner, free from initial bias and conflicts of interest. Outcomes of the Ombudsman's activities may include:

- Making recommendations to persons within the department with authority to act
- Facilitating or mediating the resolution of complaints or disputes
- Submitting reports or findings to appropriate authorities.

8.1.4 Knowledge and Technology Transfer


As a recognized leader in stormwater management amongst state and local transportation agencies, WSDOT's expertise is continually sought at the national, state, and local levels by many government agencies as well as non-profit organizations and areas of the private sector.



WSDOT expends significant resources on research devoted to developing and improving stormwater management techniques, guidance manual, training, and design tools. Municipal transportation organizations around the state often adopt WSDOT's manuals, standard specifications, and general contracting provisions. These and other stormwater-related innovations are promoted by WSDOT through a variety of venues including: publication of research reports; ad hoc presentations; and participation in the American Public Waterworks Association's Stormwater Managers Committee, National Highway Institute, Transportation Research Board Committee on Environmental Analysis in Transportation, the Puget Sound Action Team, Regional Road Maintenance Technical Working Group, and Department of Ecology's Stormwater Treatment Technical Review Committees.

8.1.5 Employee, Consultant, and Contractor Training and Education

WSDOT provides education and training to ensure that its employees (and its consultants and contractors) have the knowledge and skills necessary to perform their functions effectively and efficiently. WSDOT develops and presents employee-training programs with curricula and materials tailored to specific topics and personnel levels. These programs are evaluated and refined periodically to ensure the educational messages are both current and effective.

Many courses are held in response to updates in WSDOT's manuals. Outreach activities extend far beyond in-house training. For example, WSDOT offers erosion control, bioengineering, wetlands, and hydraulics courses that include attendees from the private sector and other state and local agencies. A large thrust of WSDOT's stormwater-related training is to support the effective implementation of its *Highway Runoff Manual* (HRM) and maintenance activity-related BMPs to protect environmental quality.

WSDOT's *Construction Site Erosion & Sediment Control Certification Course* is required for WSDOT personnel responsible for designing or inspecting a Temporary Erosion and Sediment Control (TESC) plan and for contractor personnel implementing the plan. In addition, WSDOT personnel have access to training on construction site erosion and sediment control BMP selection and design process. WSDOT's Internet site contains more information on these training programs (
<http://www.wsdot.wa.gov/environment/wqec/erosion.htm#Training>).

WSDOT also provides educational programs for employees and contractors in spill prevention control and countermeasure (SPCC) plans (
<http://www.wsdot.wa.gov/environment/hazmat/default.htm#SPCC>). Training also exists for hydrologic analysis and hydraulic modeling (
<http://www.wsdot.wa.gov/eesc/design/hydraulics/training.htm>).

In addition to the existing training courses mentioned above, the breadth of HRM-related curriculum is being expanded to include:

- An overview of HRM contents, minimum requirements, and WSDOT's, stormwater management approach,
- Project site planning and assessment,
- Permanent best management practices (BMP) selection and design
- Permanent stormwater BMP operation and maintenance, and
- Biological assessment preparation.

Coordination with WSDOT Highways and Local Program staff is occurring to explore ways to make these training opportunities available to local jurisdictions as well as their consultants and contractors.

WSDOT developed a *Stormwater Facility Inventory Training Manual* (March 2002) to provide a systematic procedure for conducting stormwater facilitating inventory activities within WSDOT right-of-ways. The manual is designed to ensure that all information necessary to prepare an outfall-specific retrofit prioritization score is collected and processed properly in the stormwater database. In addition, it provides procedures, guidance, or instruction for:

- Identifying outfalls to be inventoried
- Collecting appropriate field and research data
- Operating the database
- Selecting BMPs
- Completing planning level BMP capital construction cost estimates

WSDOT maintenance personnel receive training to support effective implementation of environmental protection BMPs for a variety of maintenance activities. Endangered Species Act (ESA) related training is a substantial component of this instruction and supports WSDOT's water quality protection efforts. *ESA 102 "Field Maintenance Crew Overview"* provides the foundation upon which other, more activity-specific training builds upon. This course includes an overview of protected species in Washington State, how maintenance activities are affected by listings, and measures for environmental protection and ESA compliance. This overview is supplemented with other ESA-related training courses maintenance personnel need to know in connection with their individual job duties. These supplemental courses include:

ESA 103, BMP Field Training – Provides hands-on training to understand when and how to apply Regional Road Maintenance Program ESA BMPs.

ESA 104, Emergency Response – Training to differentiate between emergency and unscheduled routine road maintenance and the BMPs for each.

ESA 105, Roadway Surface Maintenance and Operations – Provides in-depth understanding of patching, repairing, crack sealing, shoulder maintenance, sweeping and cleaning, and miscellaneous roadway maintenance BMPs.

ESA 106, Roadside Vegetation Maintenance – Provides in-depth understanding of litter pickup, control of noxious weeds (Class A or B), and nuisance and obstructive vegetation BMPs.

ESA 107, Drainage Facilities – Provides in-depth understanding of ditches, channels, culverts, catch basins and inlets, detention and retention basins, and slope repair BMPs.

ESA 108, Reporting Requirements – Provides in-depth understanding of *BMP Field Guide for ESA 4(d) Habitat Protection*, including when and where to apply BMPs, how to report implementation of the Regional Road Maintenance Program ESA BMPs, and checklist instructions.

ESA 109, Snow and Ice Control – Provides in-depth understanding of snow and ice control BMPs, stressing proper procedures to avoid adverse impact on receiving waters.

ESA 110, Bridge Maintenance – Provides in-depth understanding of deck and structural repair, cleaning and painting, and movable and floating bridges BMPs to minimize the amount of materials entering waterways.

Disaster Workshop – Addresses ESA-related emergency repair countermeasures and associated BMPs.

Annual Snow and Ice Training (Pass Areas) - Addresses snow and ice removal considerations under the ESA.

Annual Road & Street Maintenance School (Washington State University) - Provides updates to state and local roadway maintenance personnel on ESA and water quality-related issues.

The ESA training also includes identification and procedures for reporting illicit discharges including spills.

In addition to WSDOT's on-going training programs, additional opportunities for stormwater-related outreach and training are provided on an annual basis via such venues as WSDOT's Design and Maintenance Academies; regional Design and Construction conferences; Project Development Engineers', Statewide Maintenance Engineers', and Bridge Maintenance Supervisors' meetings; and the Maintenance Leadership Forum. More frequent venues available for maintenance staff include Bi-monthly Regional Maintenance Superintendent and Monthly Crew Safety meetings.

WSDOT's *Graduate Fellowship Program* offers opportunities for advance training for key disciplines in areas of significant need that will benefit the Department and also provide career growth and development for WSDOT employees. The program requires a high level of participant commitment. During this assignment, participants are expected to contribute extensively to work assignments that complement the program area of study. If applicable, research work will also complement the program area of study and will be coordinated through WSDOT's Research Office. After graduation, participants are assigned to a position that makes direct use of their enhanced capabilities and knowledge.

8.2 Public Involvement in Permit/Program Development

Ecology convened an advisory group to assist in the WSDOT permit and stormwater management program development process. The role of this group was to serve as a forum:

1. For Ecology and WSDOT to provide information about the permit and SWMP;
2. For stakeholders to provide input on the scope of issues to be considered in the permit development process; and
3. To serve as external reviewers of the preliminary draft permit and Stormwater Management Program.

In addition to WSDOT, the committee included representatives invited from:

- Association of Washington Cities
- City of Tacoma Public Works Environmental Services
- Eastern Washington Stormwater Group Representatives (City of Richland and Benton County)
- Federal Highway Administration
- National Oceanic and Atmospheric Administration Fisheries
- People for Puget Sound
- Puget Sound Action Team
- Puget Soundkeeper Alliance
- Snohomish County Department of Public Works
- Tribal representative
- United States Environmental Protection Agency
- United States Fish and Wildlife Service
- Washington State Chapter of the America Public Works Association Stormwater Managers Committee
- Washington State County Roads Administration Board
- Washington State Department of Fish and Wildlife
- Washington State Division of Natural Resources Aquatic Resources Division
- Senate Highways and Transportation Committee
- House Transportation Committee

Highway Runoff Manual

Ongoing refinement of the *Highway Runoff Manual* involves an interdisciplinary technical team that includes several county representatives and benefits from a close working relationship with Ecology staff as well as contributions from outside reviewers. The March 2004 HRM update process included an extensive solicitation for comments and feedback on a draft iteration of the manual.

Integrated Vegetation Management Plans

As WSDOT develops roadside vegetation management plans for all Washington State highways by 2007, the public is invited to review and comment on the plans. Copies of the plans are posted on WSDOT's Roadside Maintenance website.

Transportation Projects

WSDOT regularly holds public meetings and/or hearings for specific transportation projects. Combined with project-specific advisory groups and open houses, these meetings provide the public opportunities for early, continuous, and meaningful

involvement in projects in their local area. The public also has an opportunity to review environmental impact statements or environmental assessments that are developed for projects, which include water quality discipline reports that describe alternatives for stormwater management.

8.3 *Education/Outreach/Involvement Program Evaluation*

The following measures will be use to help evaluate the education, training and public involvement programs:

- Enhance and maintain stormwater website to include the final SWMP, enhanced HRM-related resources, and the Stormwater Research Strategy.
- Conduct WSDOT employee and contractor stormwater-related training that addresses HRM implementation and stormwater facility maintenance.

Section 9: Program Assessment and Reporting

WSDOT's SWMP strategy includes a process for continuous program improvement and refinement. WSDOT's review of its activities, inspection of its stormwater management facilities, oversight and guidance of its personnel, and research to obtain information to help guide responsible stormwater management will support this process. This section of the SWMP describes how WSDOT will evaluate the effectiveness of the SWMP, collect data and information for reporting purposes, and submit annual reports.

9.1 Program Assessment

Note: The program assessment section will be defined in consultation with Ecology during the permit development process. The program assessment will then feed into the annual reporting requirements. Additional information on this will be added later.

WSDOT's assessment of its SWMP effectiveness combines learning's gleaned from stormwater-related research with SWMP program implementation assessments to more comprehensively evaluate the effectiveness of the overall stormwater program. Program effectiveness will be based primarily on compliance with permit requirements as measured by each of program evaluation components summarized below and described as part of each SWMP section.

Note: A summary table of performance standards, taken from the program evaluation subsection of each component, will be included here with the final SWMP.

9.2 Reporting

9.2.1 Annual Report

Note: As with the program assessment section above, the annual report section will be defined in consultation with Ecology during the permit development process. Below are some initial suggestions:

The Annual Report should serve as a reporting mechanism to not only Ecology, but also a wider audience including policy makers (i.e., legislators and WSDOT management), public advocacy groups, and the general public. The Annual Report should also be a mechanism that can feed into WSDOT's *Measures, Markers and Mileposts* (a.k.a. *Gray Notebook*, the Department's quarterly performance measures report), a mechanism to keep WSDOT accountable to the Transportation Commission, legislators, and the public (☞ <http://www.wsdot.wa.gov/accountability/graynotebook/default.htm>). It also serves as an important internal management and integration tool.

The Annual Report has several purposes:

- Serve as a self-audit for WSDOT to evaluate and assess the appropriateness and effectiveness of various programs and activities described in the SWMP
- Report on the findings of WSDOT's stormwater-related monitoring and research program
- Report on WSDOT's compliance with activities required in the municipal stormwater permit.

Note: A standard format for the Annual Reports will likely be developed after consultation with Ecology.

Note: The content below was modified from the language in WSDOT's current NPDES permit.

WSDOT will submit an annual report to Ecology by September 30 addressing activities required under the WSDOT municipal stormwater permit in the previous fiscal year (July 1 – June 30). The annual report will provide a brief status report including:

- An overview highlighting significant milestones accomplished and lessons learned during the reporting period
- A summary assessment of the stormwater biennial work plan including anticipated activities slated for the next reporting period. A fiscal analysis will be included on a biennial basis to correspond to WSDOT budgeting cycle. In the event fiscal constraints materialize that would affect implementation SWMP aspects required by the permit, those circumstances would be identified in the annual report.
- An accounting of each SWMP section's applicable performance measures and, if applicable, a companion narrative summary describing accomplishments/shortcoming in greater depth.
- A summary of research findings

In the process of compiling and evaluating information for the annual report, WSDOT may identify trends, common problems, or solutions that may spur the need to revise the SWMP. The annual report will also will serve as the vehicle for describing and justifying any WSDOT-proposed stormwater management program modifications.

An electronic and hardcopy of the annual report will be submitted to Ecology, and a copy of the annual report will be posted on WSDOT's Internet site.

Appendix A – WSDOT Organizational Charts

The following organization charts illustrate which offices and divisions are involved in WSDOT's stormwater program. Offices with a direct involvement in some aspect of the stormwater program are **bolded**.

Figure A-1: WSDOT Overall Organization

Figure A-2: Environmental and Engineering Programs Overall Organization

Figure A-3: Environmental and Engineering Programs – Environmental Services Office

Figure A-4: Environmental and Engineering Programs – Design Office

Figure A-5: Maintenance and Operations Division

Figure A-6: Washington State Ferries

Figure A-7: Eastern Region

Figure A-8: North Central Region

Figure A-9: Northwest Region

Figure A-10: Olympic Region

Figure A-11: South Central Region

Figure A-12: Southwest Region

Figure A-13: Urban Corridors Region

Figure A-1: WSDOT Overall Organizational Chart

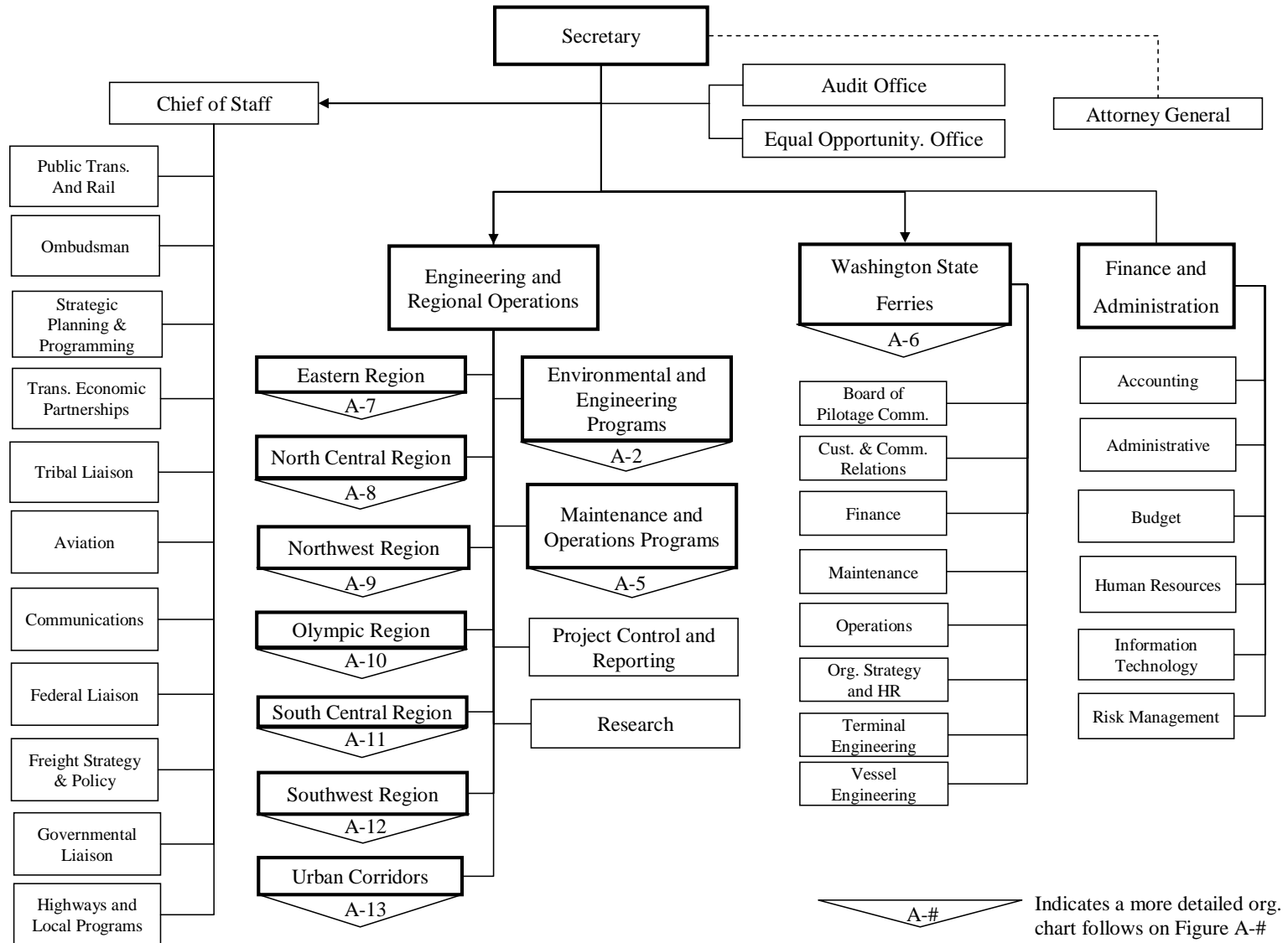


Figure A-2: Environmental and Engineering Programs – Overall Organization

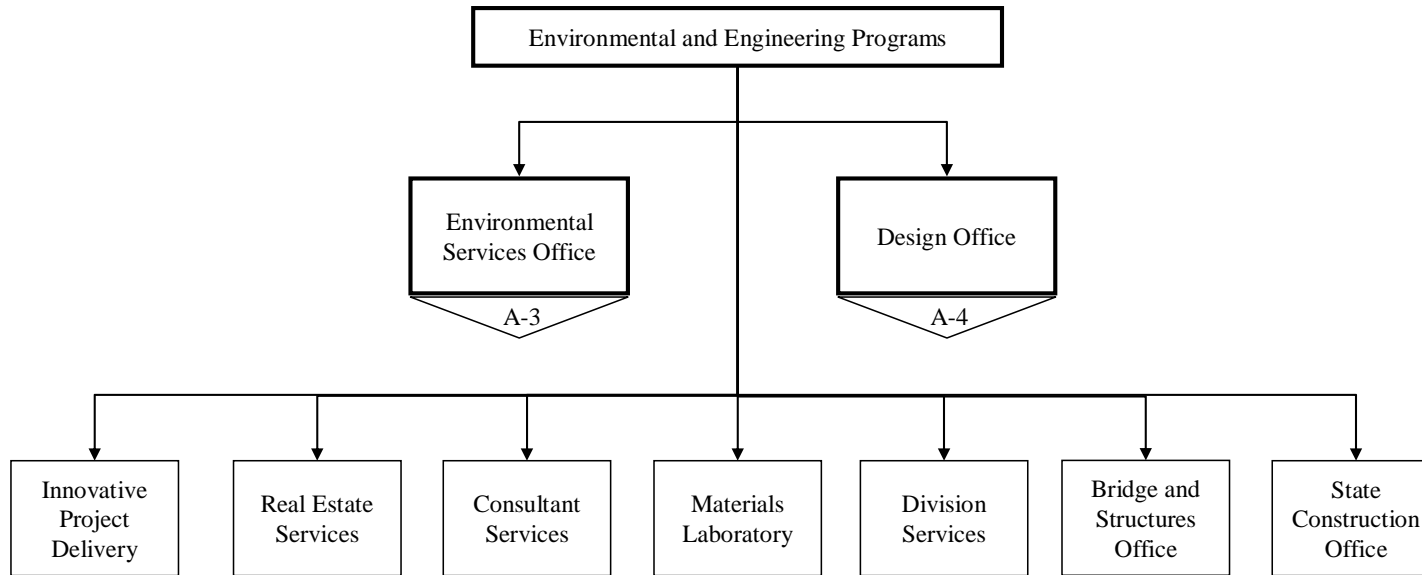


Figure A-3: Environmental and Engineering Programs – Environmental Services Office

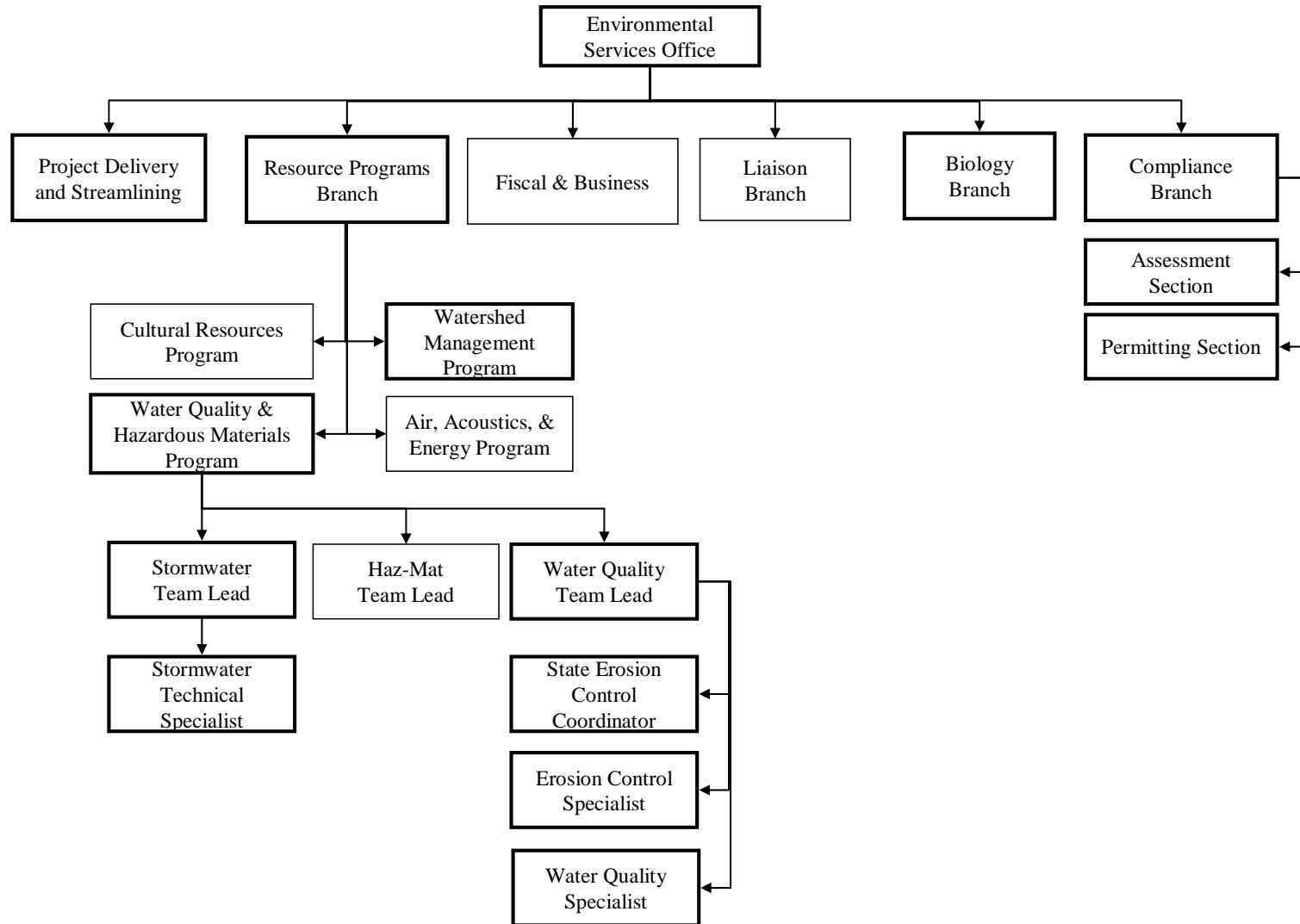


Figure A-4: Environmental and Engineering Programs – Design Office

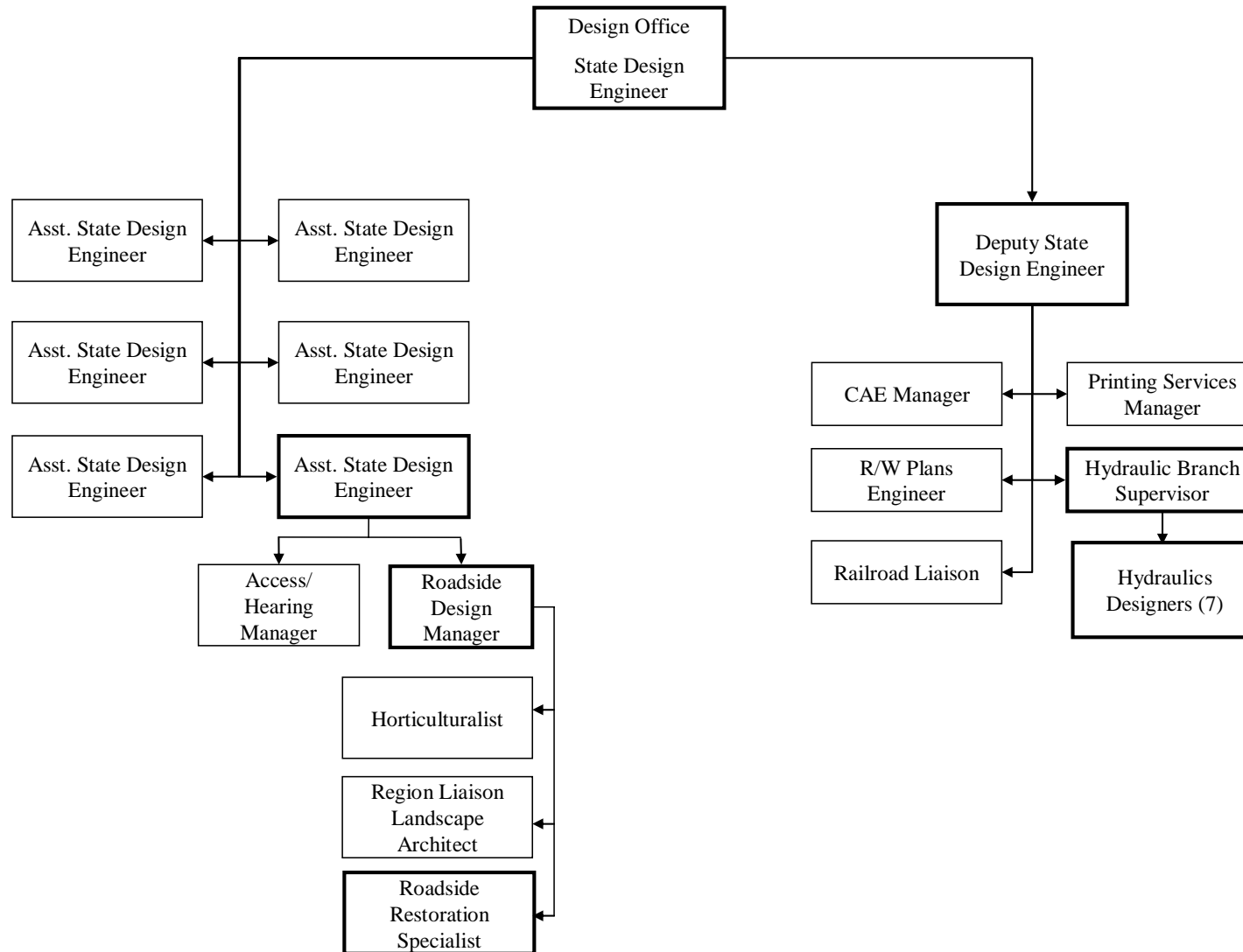


Figure A-5: Maintenance and Operations Division

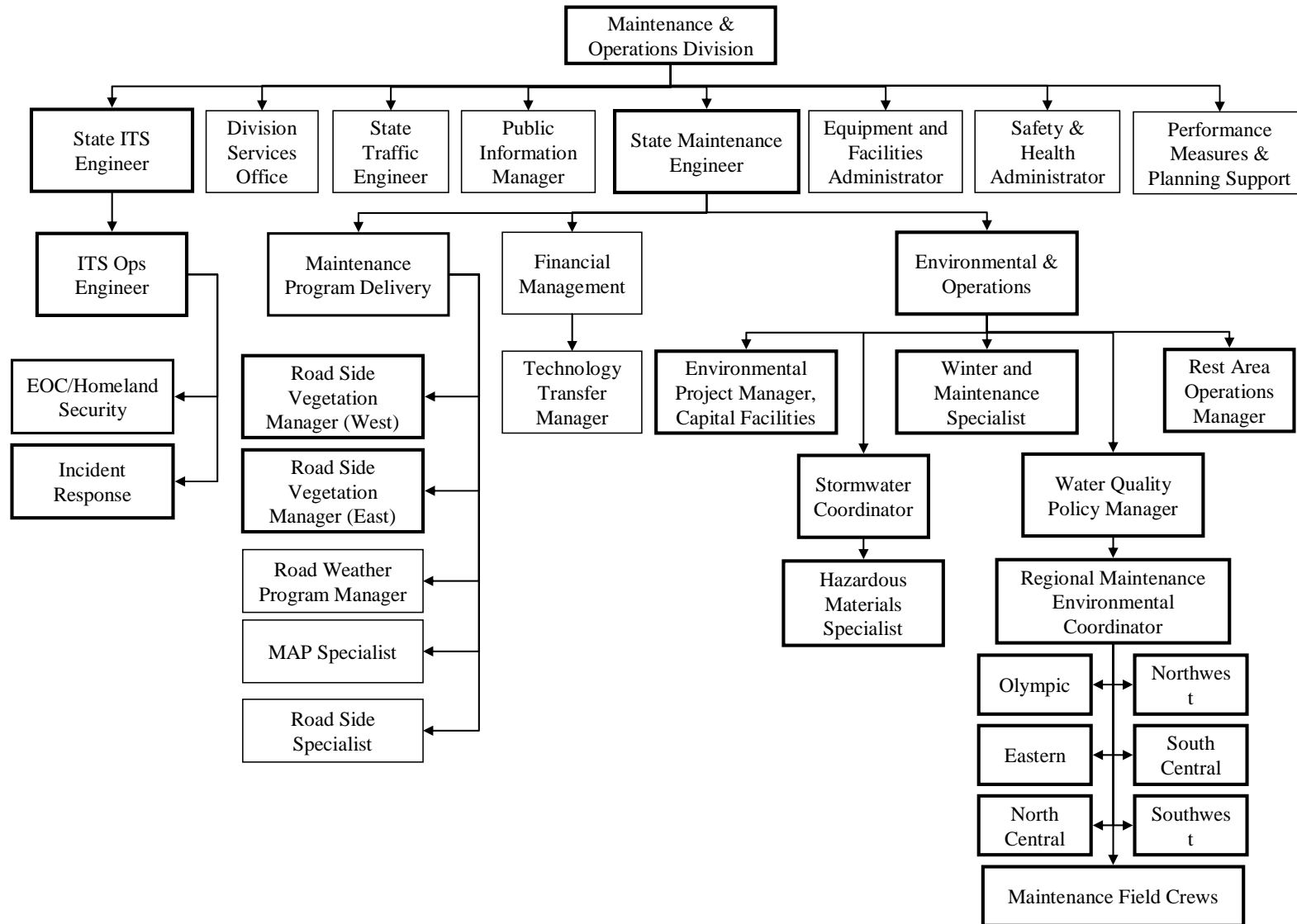


Figure A-6: Washington State Ferries

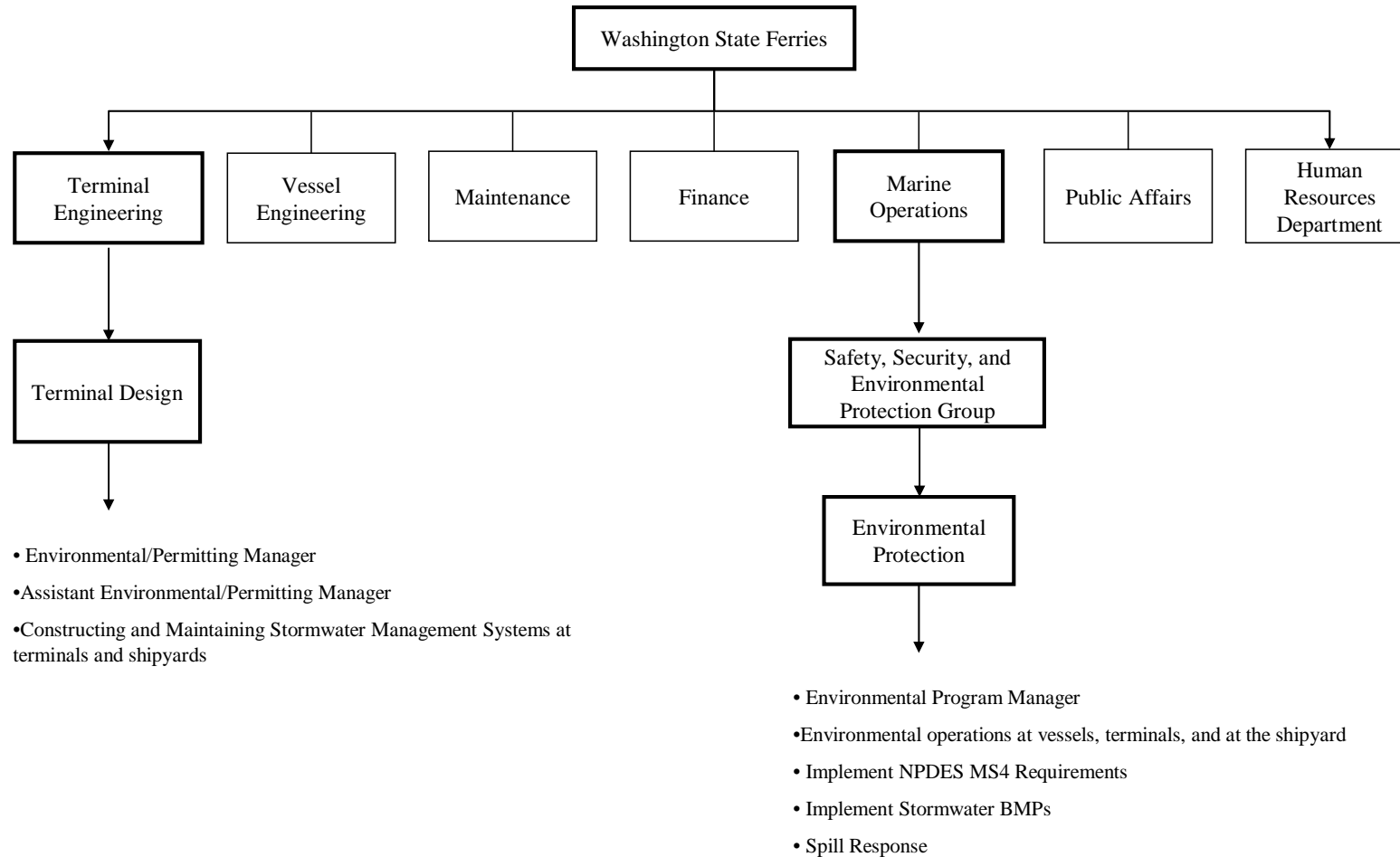
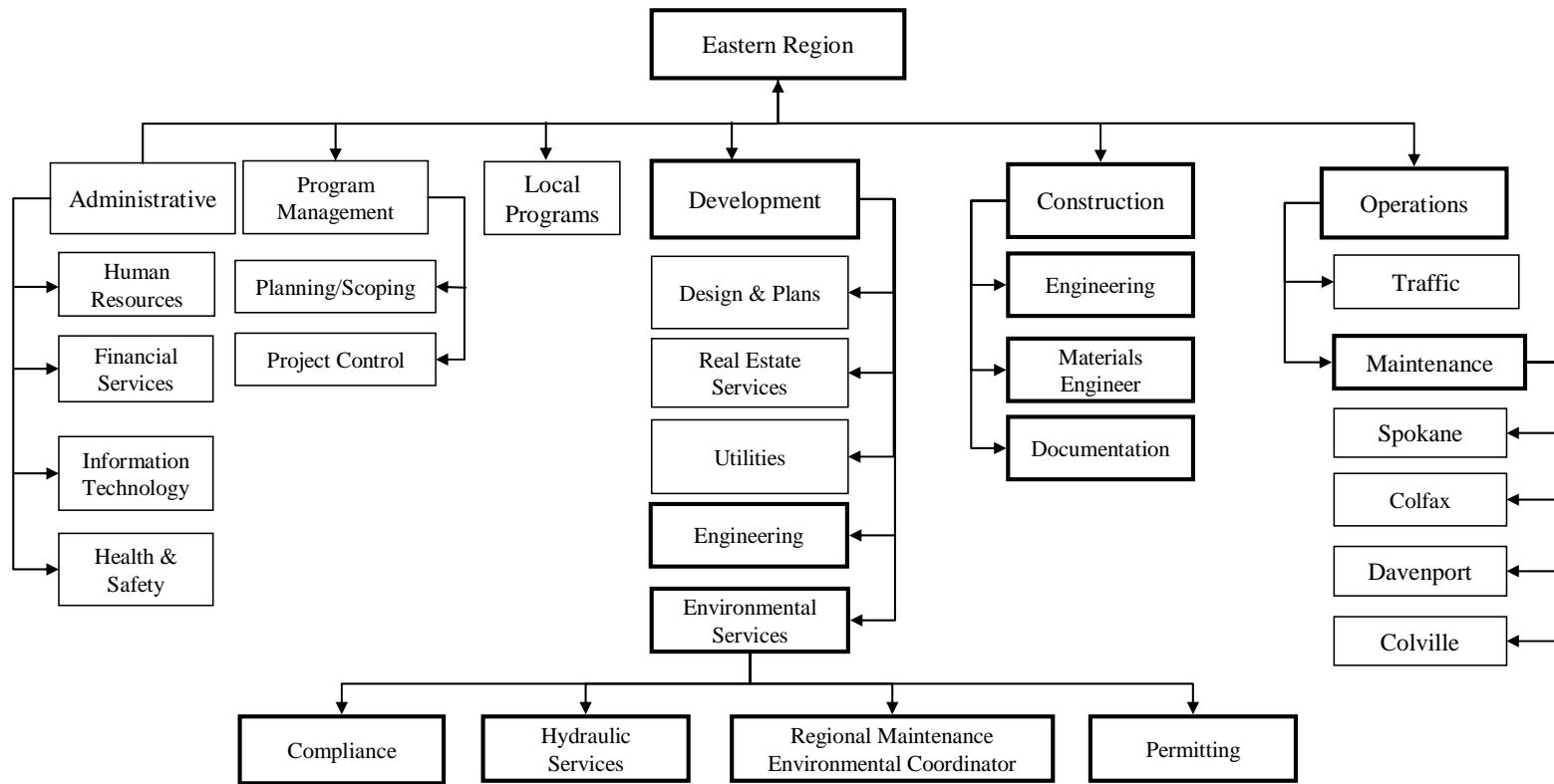
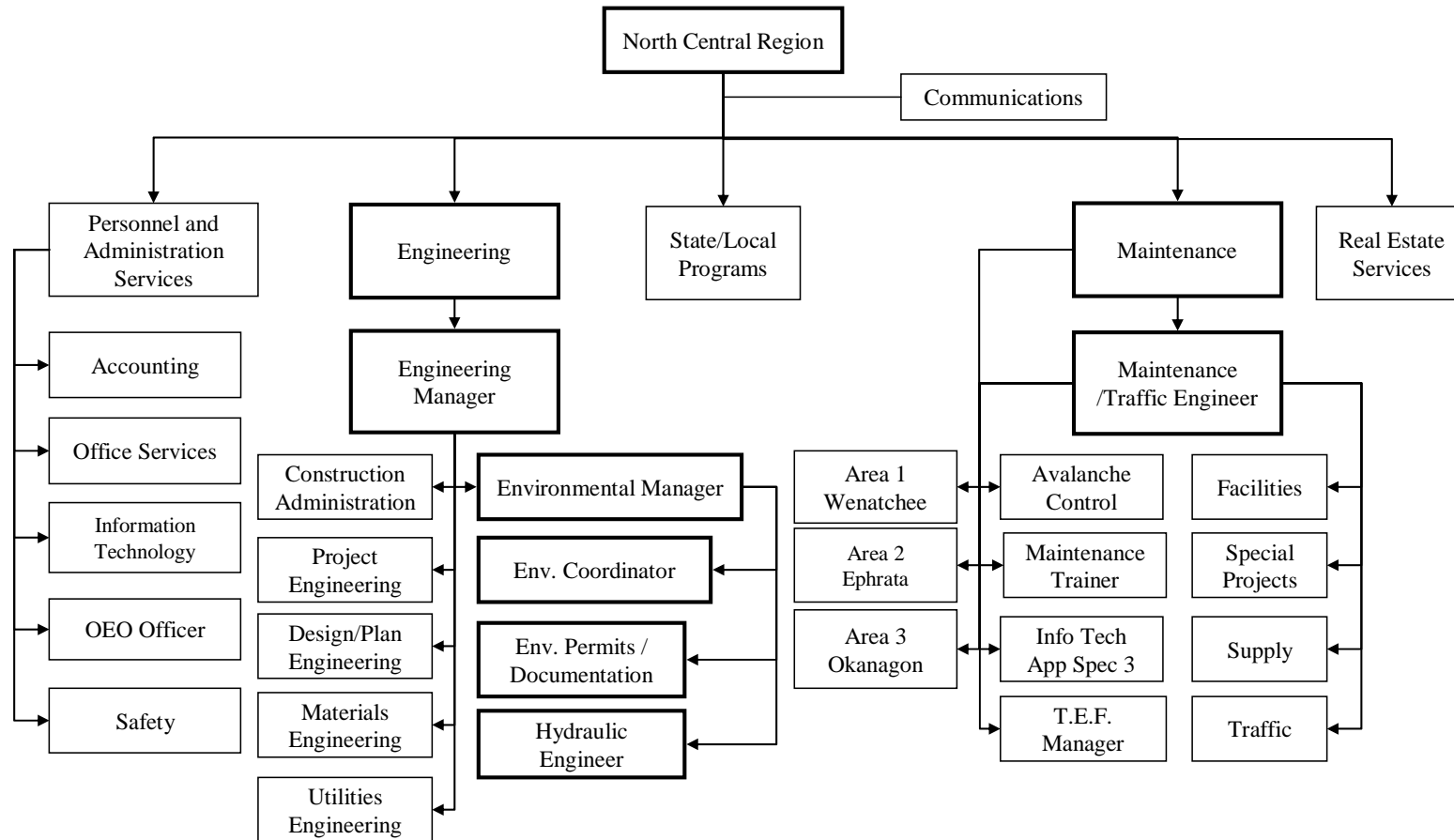


Figure A-7: Eastern Region



Eastern Region Environmental Office is responsible for environmental documentation, permitting, and restoration activities associated with construction and maintenance projects in the WSDOT Eastern Region. This office is also responsible for ensuring compliance with all permit conditions and conservation measures.

Figure A-8: North Central Region



North Central Region Environmental Services Office is responsible for environmental documentation, permitting, and restoration activities associated with construction and maintenance projects in the WSDOT North Central Region with the following counties: Chelan, Douglas, Grant, and Okanogan; plus portions of Adams, Skagit, Kittitas, and King. This office is also responsible for ensuring compliance with all permit conditions and conservation measures.

Figure A-9: Northwest Region

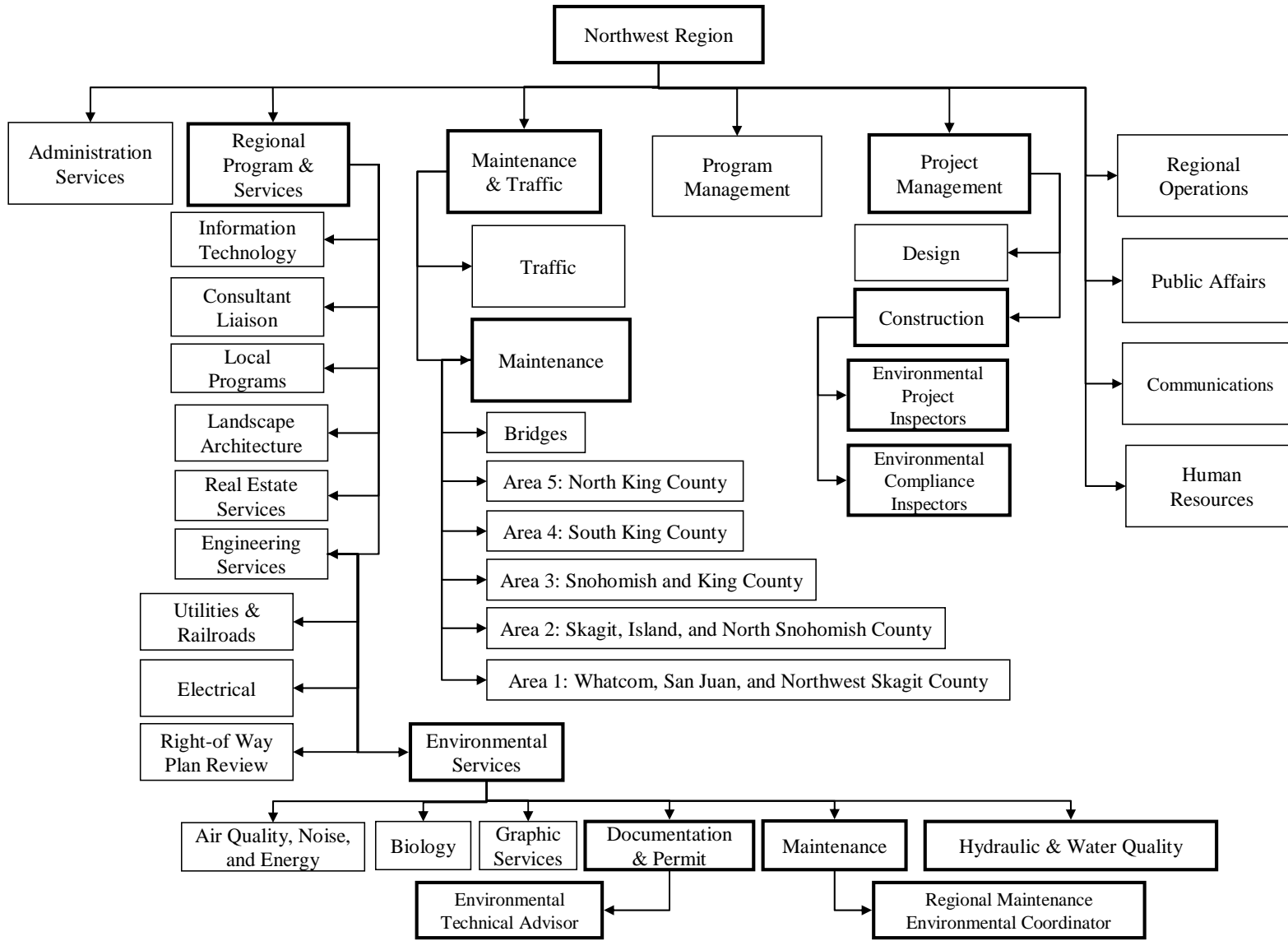
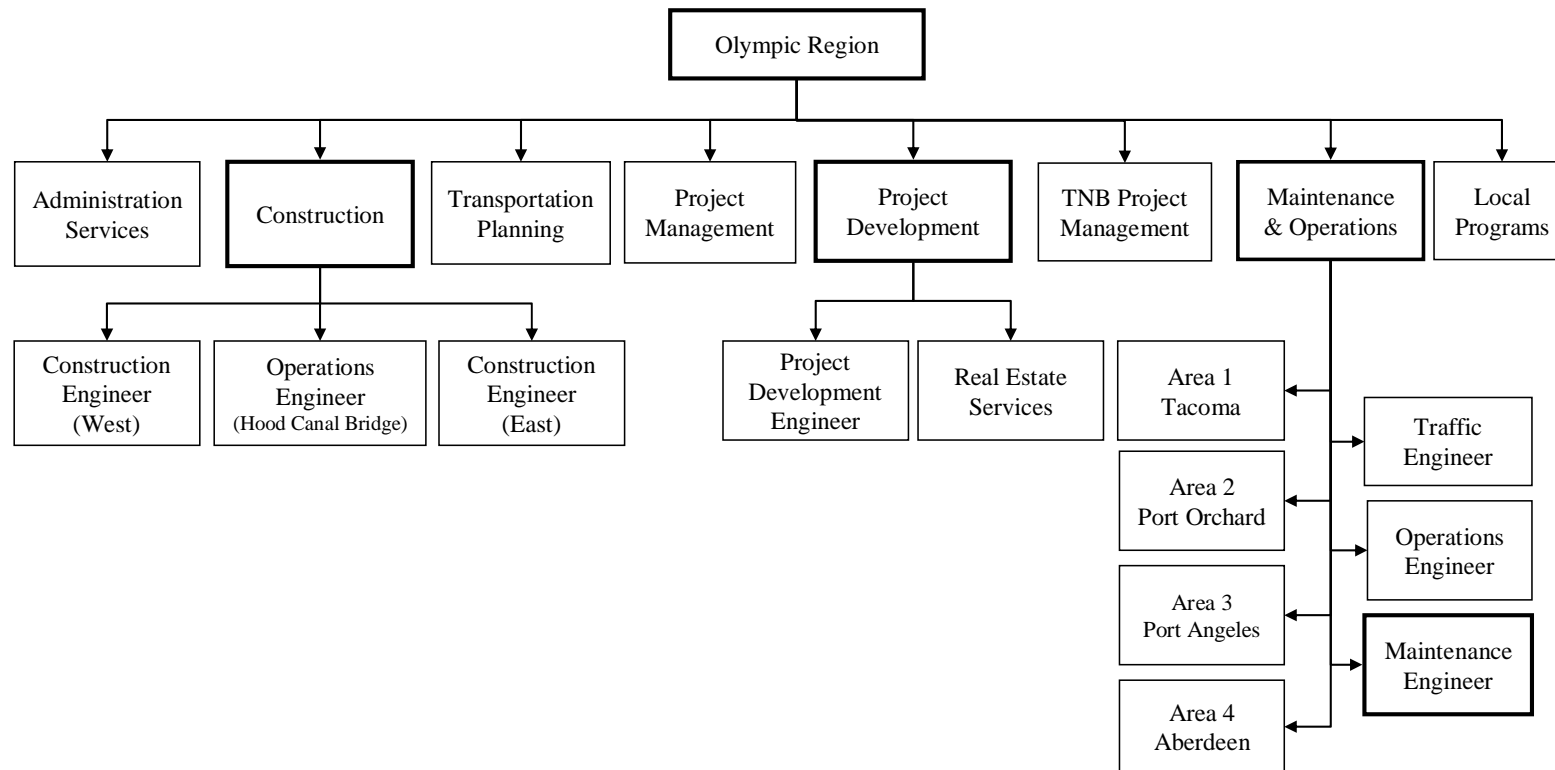


Figure A-10: Olympic Region



The Olympic Region serves the counties of Clallam, Grays Harbor, Jefferson, Kitsap, Mason, Pierce and Thurston (with the exception of Cayuse and Chinook Passes, SR410 and SR123 east of Buckley).

Figure A-11: South Central Region

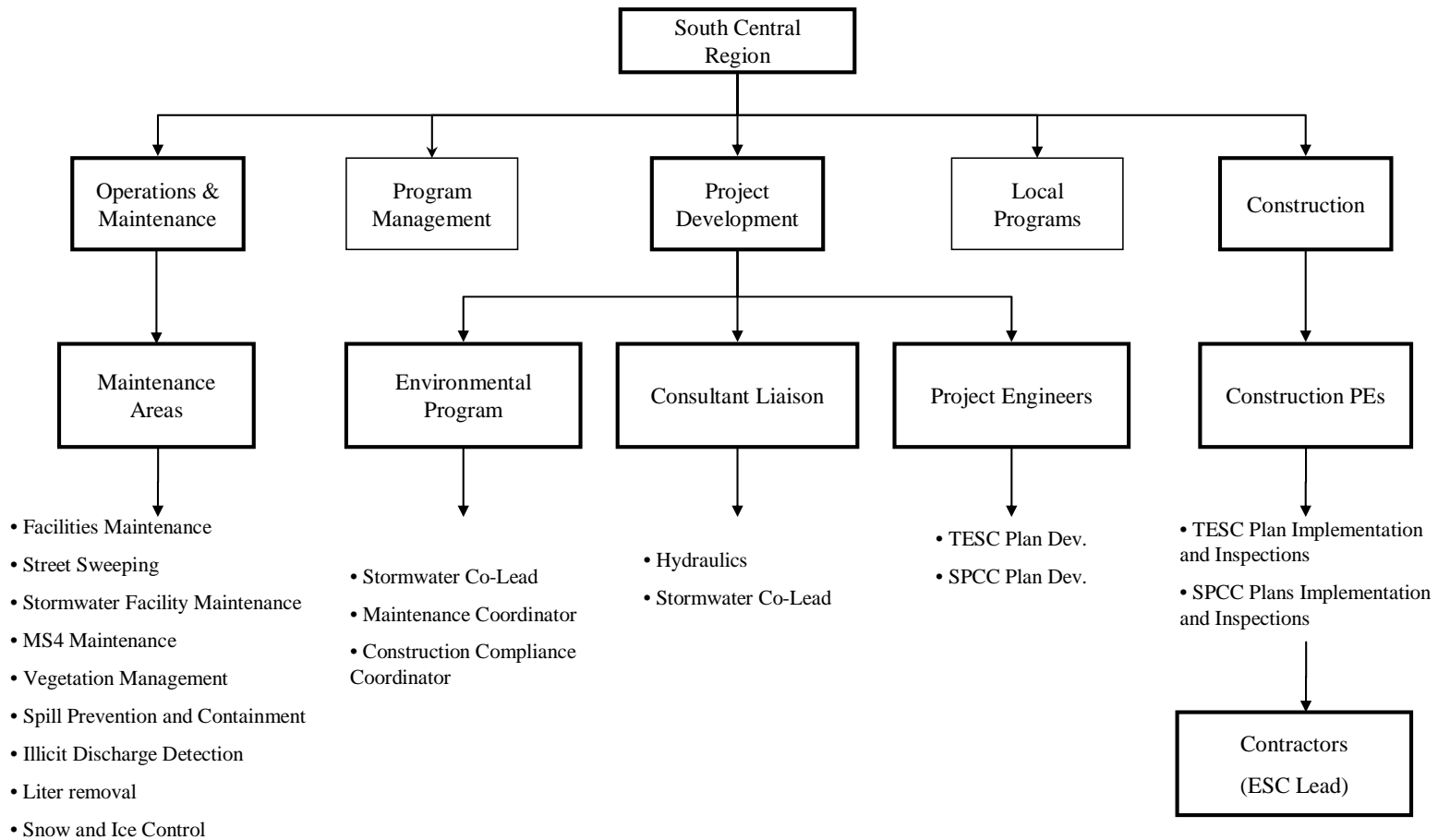
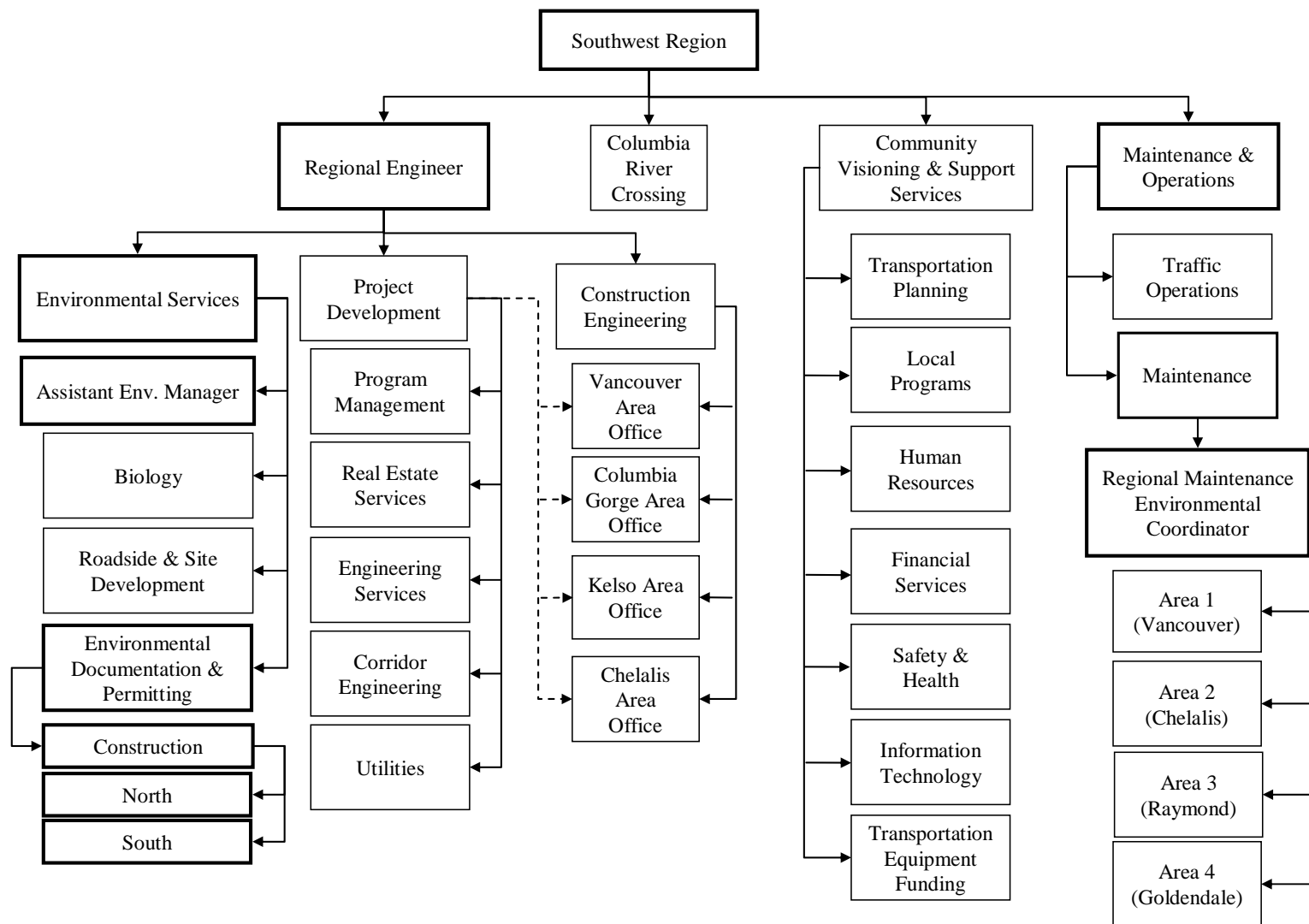


Figure A-12: Southwest Region



Southwest Region Environmental Services Office is responsible for environmental documentation, permitting, and restoration activities associated with construction and maintenance projects in the WSDOT Southwest Region with the following counties: Clark, Cowlitz, Klickitat, Lewis, Pacific, Skamania, and Wahkiakum. This office is also responsible for ensuring compliance with all permit conditions and conservation measures.

